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Equity and Sustainability Planning for Employment Zones in Tigard

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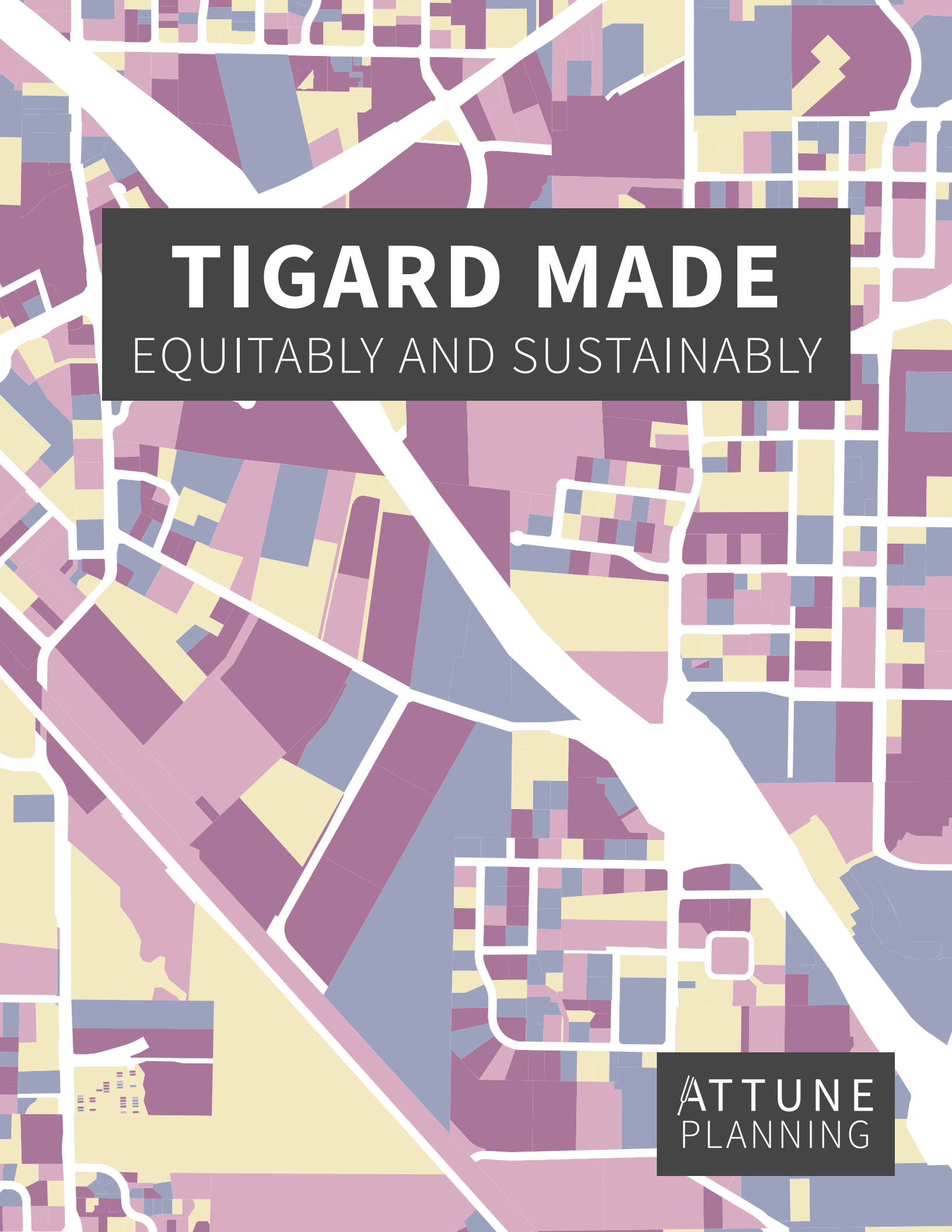
TIGARD MADE
EQUITABLY AND SUSTAINABLY
ATTUNE
PLANNING

Team Acknowledgment

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Policy Recommendations

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Land Acknowledgment

Attune Planning respectfully acknowledges that Tigard is sited on lands originally occupied by the Atfalati tribe of the Kalapuya Native Americans, who inhabited the Tualatin Valley, along with the many other tribes who once made their homes along the Columbia River. As guests on these lands, we respect the work of Indigenous leaders and families, and appreciate their knowledge, creativity, and resilience. With this report, the members of Attune Planning recognize that we are addressing the future of these lands and, in so doing, aspire to enhance equitable and sustainable livelihoods for all people regardless of creed, culture, or color. Oregon's Indigenous tribes and nations still live and thrive today, and Attune Planning stands in solidarity with them in pursuit of a just present and future.

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Executive Summary

As the City of Tigard updates its zoning code for its industrial and commercial lands, opportunity exists to center equity and sustainability in the project. Tigard would be the first city to implement a zoning reform with these values integrated into the process. Further, through the operationalizing of equity in sustainability in the zoning code, Tigard can build a healthy community, one resilient to economic and environmental changes and nurturing for businesses of diverse backgrounds and communities.

Though no other city we could identify has explicitly implemented both equity and sustainability in their zoning code, there are lessons from other cities along with extensive research that can guide us. Attune Planning strove to understand how other cities have zoned their employment areas for equity and sustainability. From those ideas, we recommended research-backed policies for the City of Tigard to deploy. Zoning is ultimately a blunt tool that cannot create the utopian world planners desire, but it can be a force for positive and for negative, cultivating certain outcomes and discouraging others.

Summary of High-Level Findings:

1. The most successful cities utilized an iterative process, continually tweaking their zoning code to reflect changing market conditions and building practices.
2. Zoning reforms in other cities have been able to successfully protect industrial jobs and advance sustainability, primarily green building and trail access.
3. Industrial zones and industrial jobs are critical for equity, as they employ disproportionately higher rates of people of color and tend to pay higher wages despite lower barriers to entry. Tigard should make effort to protect these jobs and add or maintain flexibility in the zoning code for these users.
4. Office, residential, and retail uses command higher rents; to avoid their encroachment into industrial areas, maintain and expand upon mixed use zones while utilizing these zones as physical buffers between industrial and residential areas.
5. Parking requirements are harmful to both equity and sustainability goals and should be removed.
6. Through a combination of development standards and incentives, require green building certification for new developments and redevelopments, offering bonuses for more advanced green building certifications.
7. Develop an incentive menu that reflects Tigard's values that developers can choose from and which would advance equity and sustainability, including options such as short term leases for emerging businesses and pedestrian and bicycle connectivity to improve access and sustainable transportation options.
8. Ensure the public participation processes connected with zoning are equitable.

This report is broken into four sections. The Introduction explains the project, the process, and the limitations. The Existing Conditions paints an image of Tigard as it stands today, from its zoning to its residents and workforce to the real estate market and existing green building certifications. The Precedents share a narrative of what happened in each of the five selected Precedent studies, offering lessons about process and values in a zoning reform, drawn from Portland, OR, Arlington County, VA, Richardson, TX, Alpharetta, GA, and Pittsburgh, PA. Last, the document provides an extensive discussion of Policy Recommendations. There are over 30 listed policy recommendations with accompanying research validating their inclusion. Policy recommendations are not considered exhaustive but were selected for both the magnitude of impact on equity and sustainability and their connection to the Precedents. In sum, this document offers a roadmap to guide Tigard in becoming the first city to center equity and sustainability in its commercial and industrial zoning code, preparing Tigard for the changing economy and climate.

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Section 1

INTRODUCTION

Image Source: TreeForAll

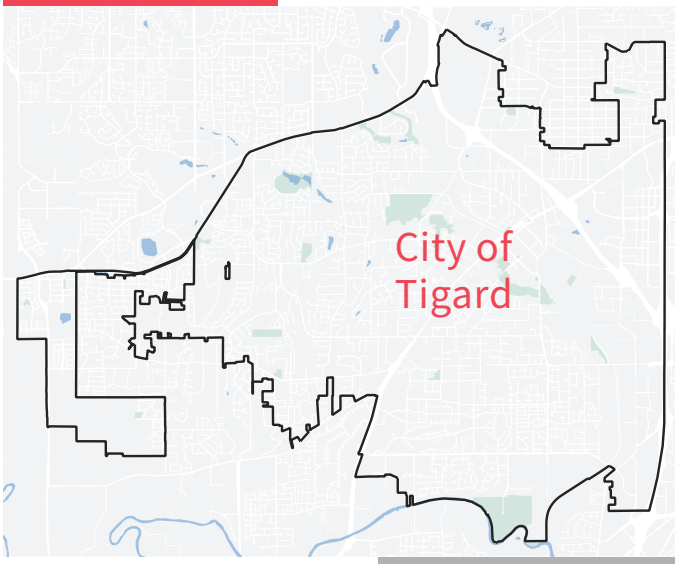
Background

The Oregon Department of Land Conservation and Development's (DLCD) Goal 9 requires that cities periodically plan for their next 20 years of employment growth. Importantly, cities must provide adequate development capacity in employment areas to accommodate anticipated growth. In 2020, the City of Tigard began that planning effort facing a known obstacle: its supply of developable employment land is highly constrained, both by Metro's Urban Growth Boundary and the fact that most of its existing employment lands are already built out. This situation is exacerbated further by ongoing encroachment of retail and entertainment uses into the city's industrial and office areas, crowding out the intended employment-focused uses.

TIGARD MADE

Maintain, Advance & Diversify Employment

Figure 1.City of Tigard



Data Source: Metro RLIS

In response to these issues, the City of Tigard's Community Development Department is overhauling Tigard's employment-land zoning. The City named this overhaul "Tigard MADE" to denote its intention to Maintain, Advance, and Diversify Employment within the city. Tigard MADE will unfold in the following project phases, conducted by city staff and a consultant team from Johnson Economics:

- Tigard's Community Development Department will develop a set of what it calls "proto-zones" (i.e. proposed zoning designations) and code language for employment areas.
- The consultant will conduct an Economic Opportunities Analysis to understand the city's existing employment-land supply, future employment-land need, and relevant employment trends. They will then analyze the City of Tigard's proposed zoning to estimate its impacts on employment and development.

Purpose

Maintaining, advancing, and diversifying employment in Tigard are worthy goals, but the city has additional stated values for Tigard MADE to advance —importantly, social equity and environmental sustainability. In early 2021, the City of Tigard began working with Attune Planning—a team of graduate students from Portland State University's Master of Urban and Regional Planning program—to research how the Tigard MADE process, rezoning, and code update could serve those values. In short, the City of Tigard asked Attune Planning to act as sustainability and equity consultants for Tigard MADE.

In partnership with the City of Tigard, Attune Planning identified the following research questions to guide that work:

- What aspects of equity and sustainability should the city consider as part of Tigard MADE?
- What needs do the city's small businesses and employers have that Tigard MADE could assist with?
- What have cities (especially suburbs) around the country done to promote equity and sustainability through land use in employment areas?
- What specific provisions within employ-ment-land development code advance equity and sustainability?
- What development or operations outcomes do cities around the country incentivize rather than require, and what do those places offer to developers and operators to secure those outcomes?
- How are lessons from those cities best applied in Tigard?

Defining Equity and Sustainability

In order to advance equity and sustainability through the Tigard MADE process, we need to understand what we mean with those terms. Ultimately, we believe these are terms that residents, workers, and stakeholders within Tigard need to determine. Still, we developed working definitions to guide us during this project and they can be used as a launching point for the Tigard community during its participation process for MADE (see Recommendation 4.2).

Equity

Equity in Tigard MADE considers how people with specific cultural and socioeconomic identities are disproportionately impacted by land-use decisions and how those impacts could be mitigated. In particular, this report focuses on race and ethnicity, nativity, income, and gender, though undoubtedly other crucial dimensions are implicated. Because equity in land use is about people and not about the land, Tigard MADE considers equity through:

- The impact of the uses of the land on adjacent communities, such as increased pollution
- The economic impact and opportunity for workers and residents by preserving and fostering jobs

Ultimately, equity is the condition that would be achieved if one's identity no longer predicted, in a statistical sense, how one fares.

Sustainability Definition

Sustainability in Tigard MADE borrows a definition from UCLA.[1]

Sustainability is the integration of environmental health, social equity and economic vitality in order to create thriving, healthy, diverse and resilient communities for this generation and generations to come. The practice of sustainability recognizes how these issues are interconnected and requires a systems approach and an acknowledgement of complexity.

Sustainability in this project will consider:

- The natural environmental context around and within the zones and land
- The impact of the uses on the natural environment and people who live and work nearby
- The built structures, their adaptability and resilience to meet future needs
- The ability for the city to maintain a strong economic base for years to come
- Whether the uses and impacts enable Tigard to be a strong partner in meeting regional goals around climate, pollution, transportation, and water

Process

Attune Planning addressed these questions by conducting several phases of research and engagement.

1 Understanding Existing Conditions in Tigard

Attune Planning investigated the underlying demographics, employment dynamics, built form, and land use in Tigard. Documenting these existing conditions helped Attune Planning:

- Understand the equity and sustainability considerations at play in Tigard;
- Better identify peer cities to study as part of its research into precedents relevant to Tigard MADE;
- Inform and tailor final policy recommendations to Tigard's unique context.

2 Identifying, Selecting, and Researching Precedents

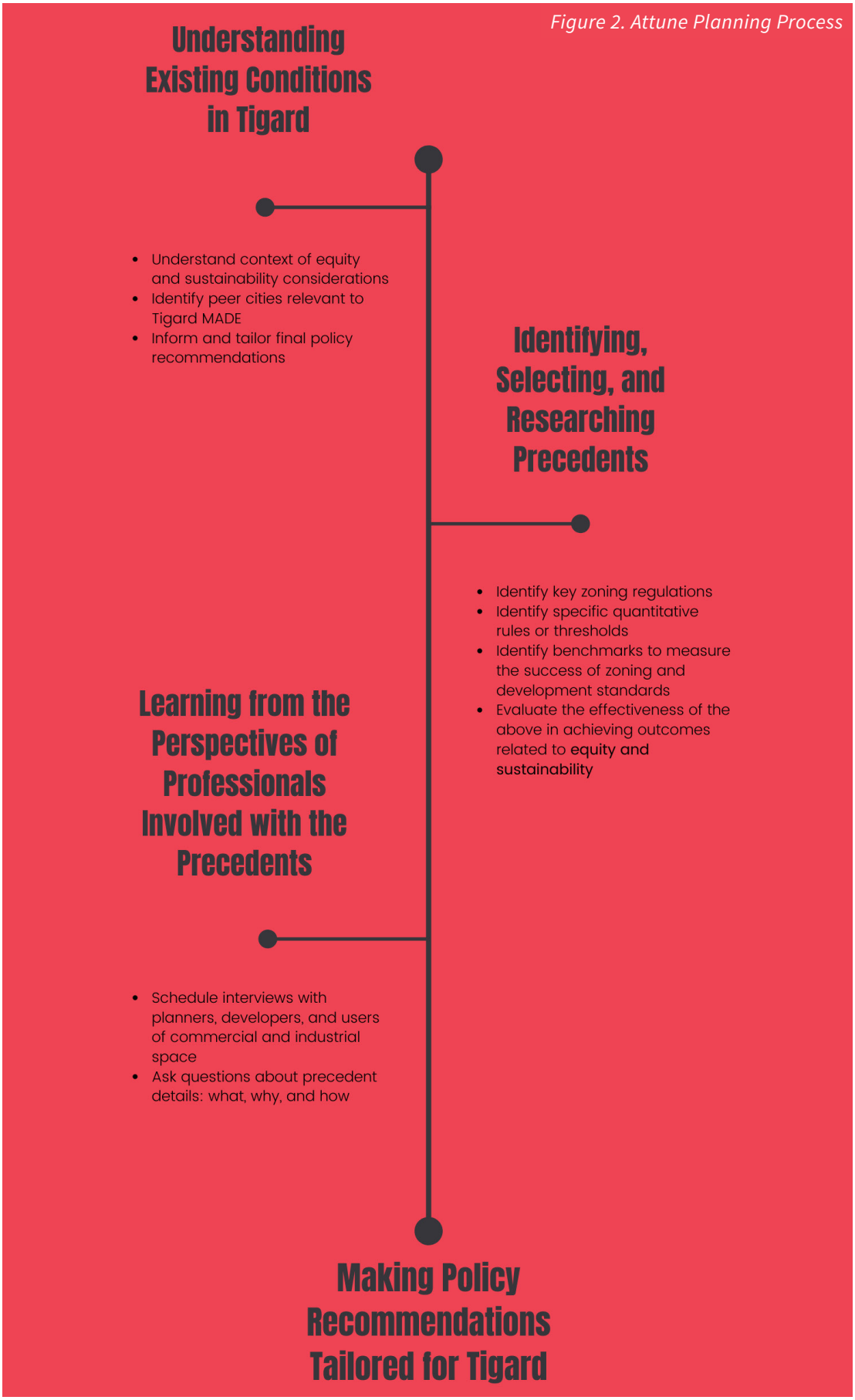
Attune Planning reviewed news articles and planning literature to identify employment-land rezonings and development-incentive programs from around the country. City of Tigard staff also recommended places and programs of interest. Attune Planning refers to these rezonings and programs "precedents."

Attune Planning and the City of Tigard collaborated to select five precedents for further study, each of which contained some obvious connection to equity or sustainability. The precedents were used to identify potential recommendations that could be applied in Tigard to advance equity and sustainability. Three of the five selected precedents involve suburbs: Arlington County, Virginia across the Potomac River from Washington, DC, Richardson, TX outside Dallas and Alpharetta, GA outside Atlanta. Two precedents come from more urban cities: Portland, OR, and Pittsburgh, PA. Attune Planning studied these precedents in detail, reviewing available plans, program documentation, and development code. Through that review, the team sought to:

- Identify key zoning regulations from that seemed to have significant equity or sustainability impacts;
- Identify specific quantitative rules or thresholds used in development standards to advance equity and sustainability that could serve as models for Tigard;
- Identify benchmarks for equity and sustainability, meaning ways that cities measured the success of their zoning and development standards;
- Evaluate the effectiveness of the above in achieving outcomes related to equity and sustainability.

The team used learnings from these precedents to inform policy recommendations.

Figure 2. Attune Planning Process



3 Learning from the Perspectives of Professionals Involved with the Precedents

To deepen our understanding of each precedent, Attune Planning scheduled interviews with planners, developers, and users of commercial and industrial space involved with or affected by the rezoning or incentive program put in place. These interviews lasted 30-90 minutes and were used to ask questions about precedent details: what rules or programs were deployed, why, and how they performed. Often, interviews attempted to better understand specific equity and sustainability motivations, considerations, and actions embedded in the precedent. The interviews tended to snowball from one professional to another.

Attune Planning also conducted brief interviews with owners of businesses newly registered in Tigard. These interviews sought to understand why owners had located their businesses in Tigard, what attributes owners needed in their business spaces, and how their interactions with the city had gone. Business-owner interviews mostly informed small miscellaneous policy recommendations at the end of the policy recommendation section.

4 Making Policy Recommendations Tailored for Tigard

Research conducted during precedent review and interviews all sought to inform the development of policy recommendations for Tigard. Each policy recommendation seeks to cater to Tigard's specific context—for instance, by contrasting with Tigard's existing development code, by recommending specific locations for zoning changes, or by advising on who Tigard should speak with to further narrow their course of action.

Attune Planning packaged its research findings and recommendations in this report. The City of Tigard should use the report's recommendations to inform equity- and sustainability-enhancing revisions to the proposed "proto-zones" and development code it plans to analyze during Consultant Phase 2 of Tigard MADE, described above.

Limitations

This project had a number of limitations.

First, employment-specific land use and development code are new technical areas for members of Attune Planning. Undertaking this project necessitated considerable background learning in order to ask the right questions and home in on relevant details. Electing to focus on land use and development code also limited the scope of the research, excluding myriad other programs and initiatives that support equity and sustainability in employment lands.

Second, the COVID-19 pandemic precluded in-person interviews and community engagement. It also limited the potential for potential random encounters with community members or business owners whenever the group visited the City of Tigard.

Third, the project was limited in its duration. Scoping lasted through mid-March, leaving only two and half months for implementation. This topic is rich and underexplored in planning literature. We hope staff at the City of Tigard can continue to expand this line of thinking in the months and years to come.

Fourth, the project only solicited a small amount of input from Tigard's businesses, employees, and residents. This is in large part because the City of Tigard is conducting ongoing engagement with those community members and wished to avoid fatiguing would-be participants. We look forward to learning more about the engagement the City does to inform Tigard MADE and about the ways the community's perspective is represented in the final changes brought to the Planning Commission and City Council.

Positionality

A key limitation of this research stems from the positionality and constrained perspectives of the research team. Research benefits from a diversity of perspectives, which derive from individuals' identities and experiences. Very broadly speaking, the research team's perspective tends to be characterized by privileged identities. For instance, the group is nearly all White, cisgender male, native English speakers, with higher than average educational attainment. All are able-bodied. And no members of the team are Tigard residents or workers. These facts do not preclude the possibility of generating insightful research. Indeed, for instance, privileged identities likely increase access to the interviews we conducted with professionals. However, these identities limit the extent to which the team is able to anticipate, account for, and fully understand the myriad aspects of equity and sustainability invoked by this project. The team's positionality is necessarily reflected in the scope of work we selected, the questions we asked of the precedents, and the policies we ultimately recommended.

Citations

1. UCLA Sustainability. *"What Is Sustainability?"* Accessed March 30, 2021. https://www.sustain.ucla.edu/what-is-sustainability/

Section 2

EXISTING CONDITIONS

Image Source: Paul Runge

ATTUNE PLANNING

Tigard's Current Employment Lands

Geography

The City of Tigard is located in Washington County, Oregon and is an inner ring suburb of the Portland metropolitan area. Tigard is approximately 12.75 square miles in area and is served by Interstate 5, Highway 217, and 99W for mobility throughout the region.[1] Identified in red on the map in Figure 3 are the City of TIgard's Employment Lands considered under Tigard MADE. Within Tigard's Employment Lands, there are two base zone categories including commercial and industrial, as well as one hybrid "Mixed-Use" lands. Below are Tigard's zoning categories and the purpose of these zoning categories per Title 18, Tigard's Community Development Code.[2]

Employment Zone Typology

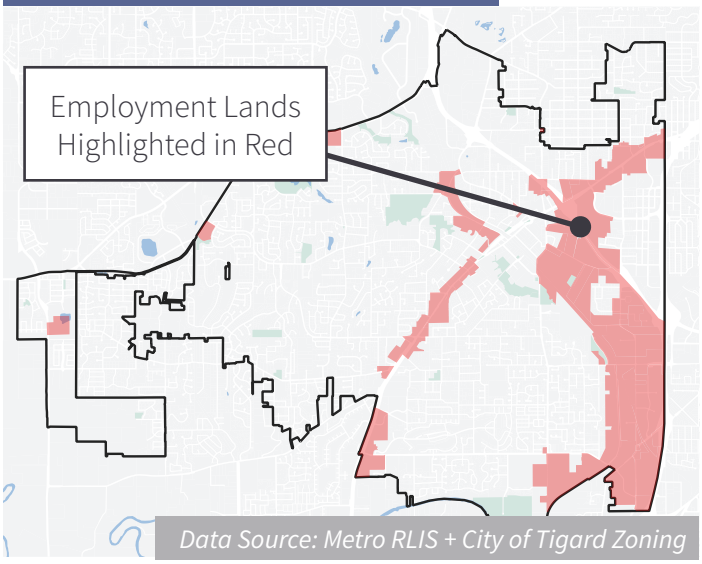
18.120.000 - Commercial

A. *Ensuring that a full range of goods and services are available throughout the city so that residents can fulfill all or most of their needs within easy driving distance and, ideally, within easy walking and biking distance of their homes;*

B. *Ensuring that a full range of economic activities and job opportunities are available throughout the city; and*

C. *Minimizing the potential adverse impacts of commercial uses on residential uses by carefully locating and selecting the types of uses allowed in each commercial zone.*

Figure 3. Tigard MADE Employment Lands



18.130.010 - Industrial

A. *Ensuring that a full range of economic activities and job opportunities are available throughout the city; and*

B. *Minimizing the potential adverse impacts of industrial uses on nonindustrial uses by carefully locating and selecting the types of uses allowed in each industrial zone.*

Mixed-Use Employment

Tigard's Title 18 does not have dedicated section for MUE lands. Instead, Title 18 lists MUE under commercial zones.

Employment Zones Base Designations

Of Tigard's land use and zoning categories of Commercial, Industrial and Mixed-Use Employment land, There are eight unique base zones. Zoning regulates use of land by allowing and restricting uses at particular locations of the city as well as by imposing standards proposed developments must conform to. Below are Tigard's employment land base zoning designations and brief description of the designation.[3]

18.120.020 Commercial Zones

A. C-N Neighborhood Commercial - *Designed to provide convenience goods and services within a small cluster of stores adjacent to residential neighborhoods.*

B. C-C Community Commercial - *Designed to provide convenience shopping facilities that meet the regular needs of nearby residential neighborhoods.*

C. C-G General Commercial - *Designed to accommodate a full range of retail, office, and civic uses with a citywide and even regional trade area.*

D. C-P Professional Commercial - *Designed to accommodate civic and professional services and compatible support services.*

F. MUE - Mixed Use Employment - *Designed to accommodate a wide range of uses including major retail goods and services, business and professional offices, civic uses, and apartments.*

18.130.020 Industrial Zones

A. I-P Industrial Park - 18.130.020(A) *provides appropriate locations for combining light manufacturing, office, and small-scale commercial uses, such as restaurants, personal services, and fitness centers, in a campus-like setting with no nuisance characteristics such as noise, glare, odor, or vibration.*

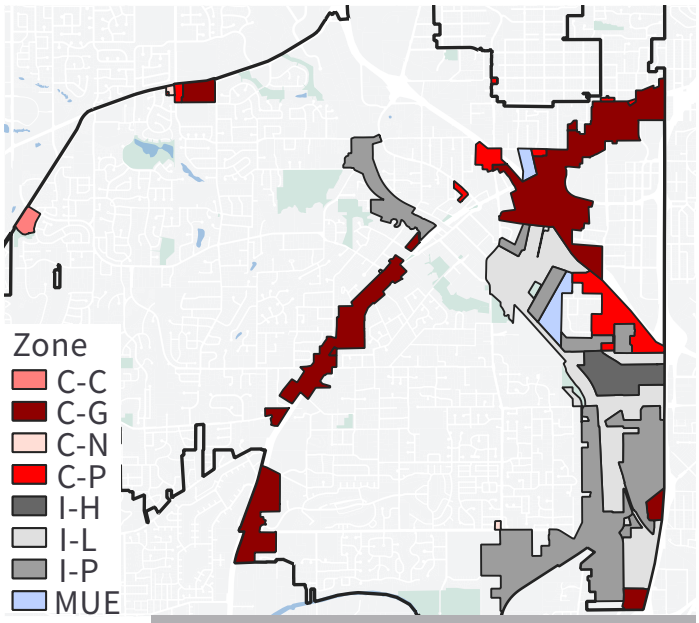
B. I-L Light Industrial -18.130.020(B) *provides appropriate locations for general industrial uses including, but not limited to: industrial services, manufacturing and production, research and development, warehousing and freight movement, and wholesale sales activities with few, if any, nuisance characteristics such as noise, glare, odor, or vibration*

C. I-H Heavy Industrial - *provides appropriate locations for intensive industrial uses including industrial service, manufacturing and production, research and development, warehousing and freight movement, railroad yards, waste-related businesses, and wholesale sales activities.*

Observations

Tigard MADE employment lands represent about 16.3%, or 1,334 acres, of Tigard's total land area of 8,163 acres.[4] Shown in Figure 4 are the City of Tigard's zoning designations for employment lands considered under Tigard MADE. Over 50% of the City of Tigard's employment lands are zoned for industrial uses. Over 90% of that industrial land are dedicated to Light Industrial and Industrial Park while only 58 acres are dedicated to heavy industrial. Of Tigard's employment land, 30.4% - or about 409 acres - of it is designated G-C, General Commercial. All other commercial designated land is fewer than of 10% employment land. The city of Tigard does not have much of its employment land designated MUE - Mixed-Use Employment. Table 1 shows a complete breakdown of Tigard's employment lands in terms of acreage and percentage of all Tigard's land area.

Figure 4. Tigard MADE Employment Zones



Data Source: Metro RLIS + City of Tigard Zoning

Highlights

Tigard's zones may not reflect the reality on the ground, and as discussed in the Introduction, MADE exists in part because of encroachment of businesses into zones through creative reading of zoning rules. The siting of things such as bouldering gyms in industrial-intended areas. The MADE project is meant to revisit these zones and where the zones are applied. The rest of this report considers how to do that while supporting equity and sustainability.

Table 1. Tigard MADE Employment Zones

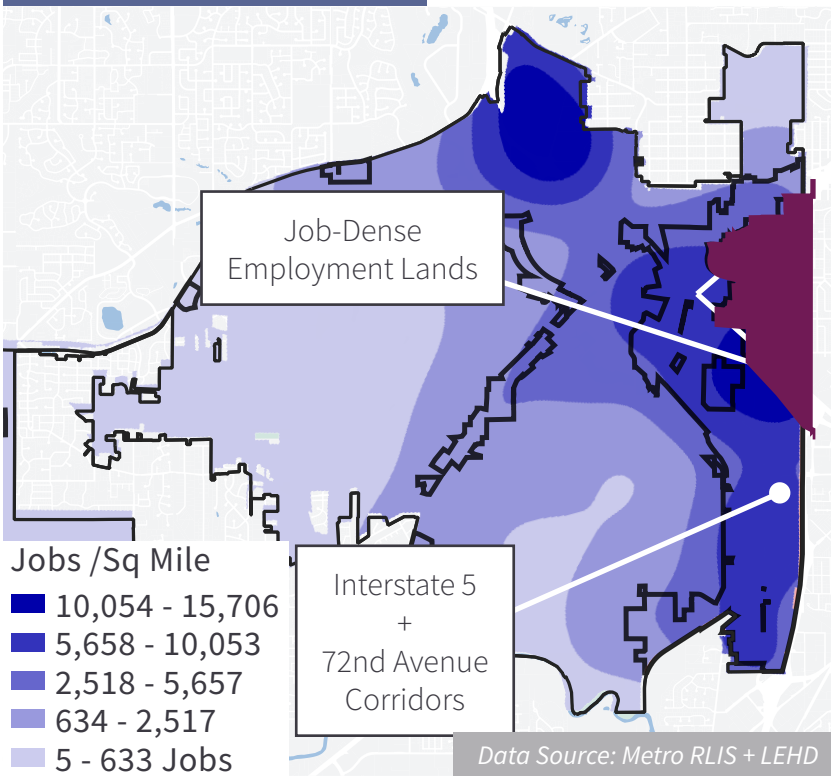
Existing Employment Lands Zone	Acreage	Percent of Employment Lands Study Area
C-C	28	2.1%
C-G	409	30.4%
C-N	3	0.2%
C-P	84	6.3%
I-H	58	4.3%
I-L	289	21.5%
I-P	439	32.7%
MUE	34	2.5%
Employment Lands Area	1,334	16.3%

Data Source: Metro RLIS + City of Tigard Zoning

Job Density

Job density increases near the Washington Square Regional Center and along the Interstate 5 and 72nd Avenue corridors. It is important to note that the Washington Square Regional Center is not part of Tigard MADE as it is part of a separate City of Tigard planning effort. The "Tigard Triangle" is also not included as part of Tigard MADE as it is a part of a special district. Shown in Figure 5, the 72nd Avenue Corridor contains the highest job density within the City of Tigard's employment lands. The majority of land in the Interstate 5 and 72nd Avenue Corridors contains between 5,600 and 10,000 jobs per square mile while a small portion of land is considered to have 10,000 to 15,000 jobs per square mile.[5] This area's relative proximity to the Tigard Triangle is notable given the Triangle's exclusion from this process as well as the broader spatial context and its implications for zoning reform.

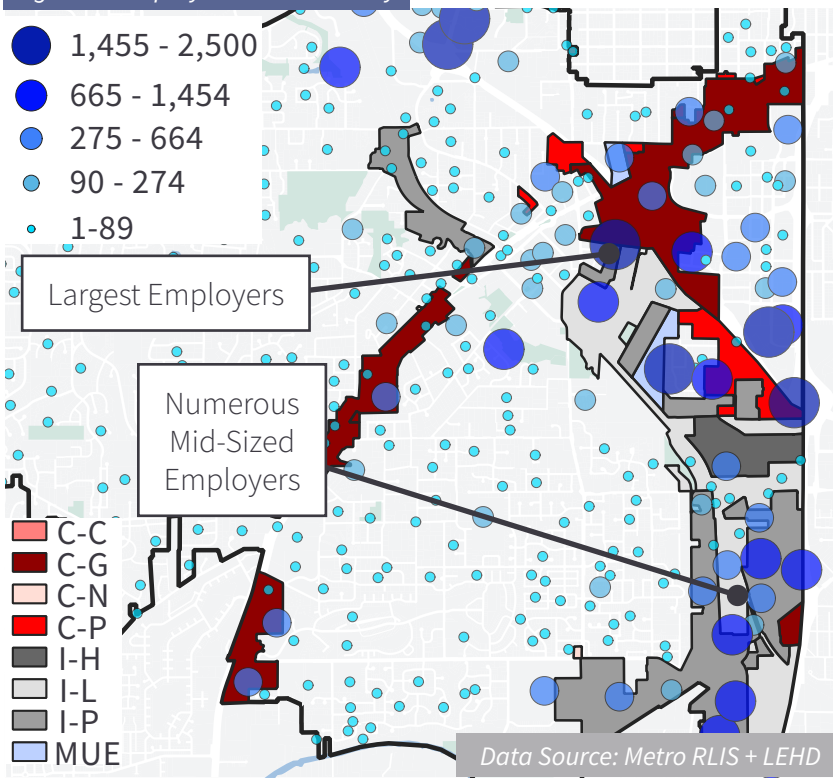
Figure 5. Employment Land Density



Job Density and Zoning

The City of Tigard's Commercial zones maintain some of the highest densities of jobs, as shown in Figure 6. These sites are particularly large though less numerous, with each site supporting a higher number of jobs. Industrial-zoned parcels are more numerous but support more mid-sized employment levels. The only Heavy Industrial zone in Tigard contains between 275-664 jobs, suggesting that Heavy Industrial employment areas are not necessarily job dense.

Figure 6. Employment Dot Density



Employer-Housing Dynamics

Industry Breakdown

City of Tigard's business sectors were classified into four different industry types. These include Trade and Supply Chain; Retail and Entertainment; Management and Professional; and Administrative Services. The City of Tigard supplied Attune Planning with the industry data including information by sector for number of firms, average employees, and average pay. This data originated from the Oregon Employment Department. Identified in Table 2 below, the Management and Professional Services Industry has the most firms, employs the most people, and offers the highest average salary of any industry within Tigard. Retail, on the other hand, has the fewest firms but employs the second highest number of workers while offering the lowest average annual salary of the four industries. Administrative Services has the second highest number of firms located in Tigard but employs the fewest people. Trade and Supply Chain workers earn the second highest average salary, employ an average 10,060 workers, and represent little more than 700 firms.[6]

Table 2. Industry Sector Breakdown

	Industry	Firms	Average Employees	Average Annual Salary
	Trade and Supply Chain	736	10,060	$75,623.76
	Retail and Entertainment	588	10,462	$31,365.76
	Management and Professional	1082	11,293	$80,655.16
	Administrative Services	959	9,987	$47,771.18

Data Source: Oregon Employment Department, Quarterly Census of Employment and Wages, 2019

Tigard's Employment Typology

Trade and Supply Chain

- Construction
- Manufacturing,
- Wholesale Trade
- Transportation and Warehousing

Figure 7. Trade and Supply Chain

Image Source : Paul Runge

Retail and Entertainment

- Retail Trade,
- Arts, Entertainment, and Recreation
- Accommodation and food services

Figure 8. Retail and Entertainment

Image Source : CenterCal Properties

Management and Professional

- Information Technology
- Finance and Insurance
- Real Estate, Rental, and Leasing
- Professional, Scientific, and Technical Service.
- Management of Companies and Enterprises

Figure 9. Management and Professional

Image Source : Paul Runge

Administrative Services

- Administrative and Support
- Educational Services
- Healthcare
- Other Services

Figure 10. Administrative Services

Image Source : Paul Runge

Existing Businesses

The City of Tigard's business share was compared to the State of Oregon to identify any potential sector agglomeration. Sector agglomeration shows whether certain industries tend to locate in Tigard more frequently than the state as a whole and can help planners ensure the City is adequately meeting the needs of those industries to support their continued success. The location quotient data comes from the Oregon State Employment Department data from the year 2019. Location quotients shown in Table 3 were calculated to identify any potential agglomeration.

Tigard in Comparison to the State of Oregon

The Following industry sectors have a location quotient score of more than one in the City of Tigard:

- Construction
- Wholesale Trade
- Retail Trade
- Information
- Finance and Insurance
- Real Estate and Rental and Leasing
- Professional, Scientific, and Technical Services
- Administrative and Support and Waste Management and Remediation Services
- Educational Services

The following industry sectors have a location quotient score of less than one in the City of Tigard:

- Manufacturing
- Transportation, Warehousing, and Utilities
- Health Care and Social Assistance
- Arts, Entertainment, and Recreation
- Accommodation and Food Services
- Other Services

Location Quotient Explained

A location quotient score greater than one indicates that the sector has a higher concentration of employment than the comparison geography. In this case, the location quotient compares the City of Tigard with the State of Oregon. Therefore, an industry with a score higher than one means the City of Tigard has a higher share of employment than the statewide average. If a location quotient score is less than one, the industry is less predominant in Tigard.

Table 3. Sector Specialization

	Sector	Tigard Share of Employment	Oregon Share of Employment	Location Quotient
	Construction	12%	6%	2.2
	Manufacturing	5%	10%	0.5
	Wholesale Trade	5%	4%	1.3
	Transportation, Warehousing, and Utilities	1%	4%	0.4
	Retail Trade	16%	11%	1.5
	Arts, Entertainment, and Recreation	1%	1%	0.6
	Accommodation and Food Services	8%	9%	0.8
	Information	3%	2%	1.8
	Finance and Insurance	10%	3%	3.3
	Real Estate and Rental and Leasing	2%	1%	1.2
	Professional, Scientific, and Technical Services	9%	5%	1.8
	Management of Companies and Enterprises	3%	3%	1.1
	Administrative and Support and Waste Management and Remediation Services	9%	5%	1.7
	Educational Services	4%	2%	2.2
	Health Care and Social Assistance	8%	14%	0.6
	Other Services	4%	4%	0.9
Not included as Business Sector	Government	1%	14%	0.1

Data Source: Oregon Employment Department, Quarterly Census of Employment and Wages, 2019

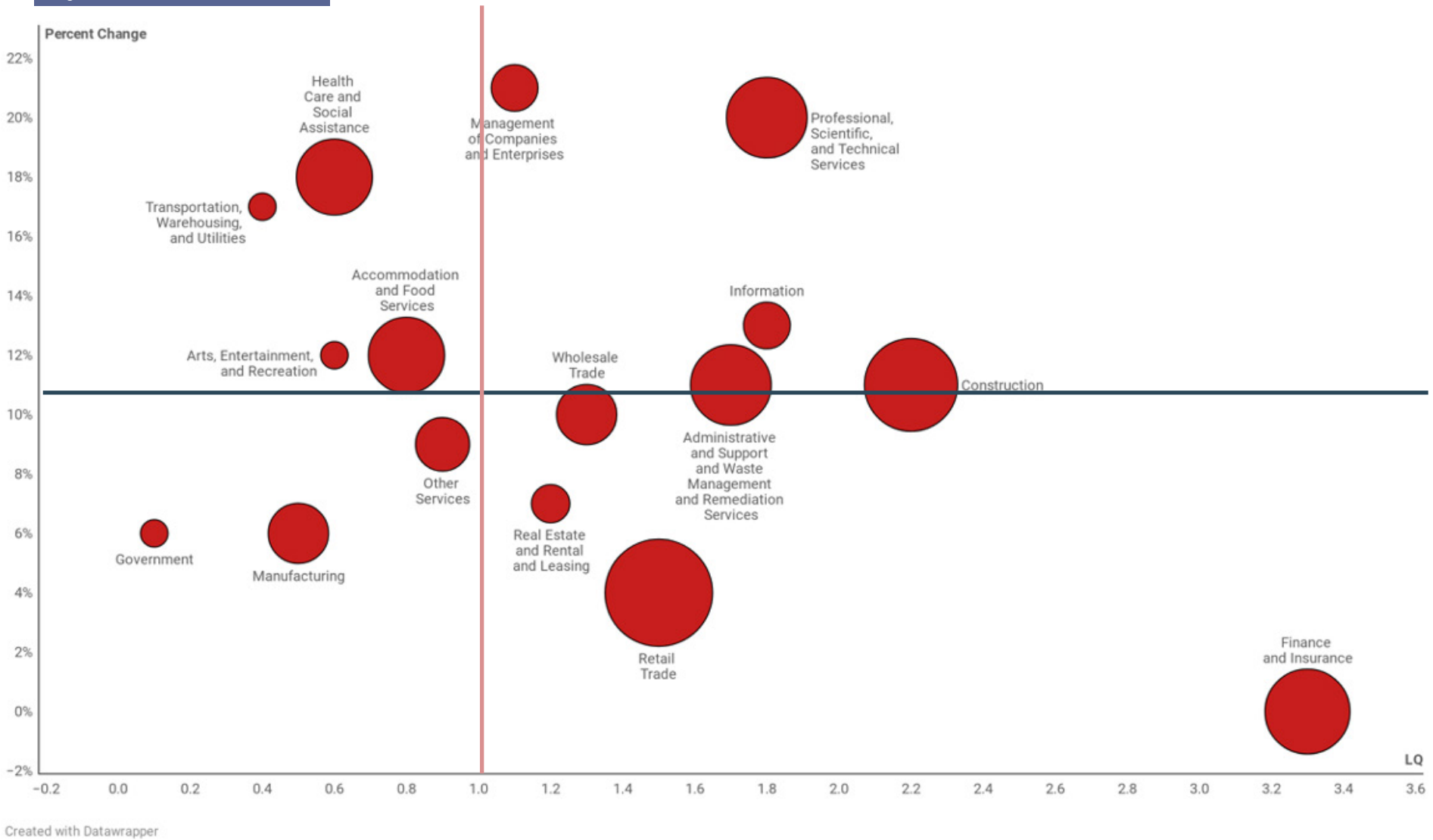
Business Profile / Location Quotient

Tigard is a hub for several industry sectors, most notably Finance and Insurance, Retail Trade, Construction, Professional, Scientific, and Technical Services, Accommodation and Food Services, and Health Care and Social Assistance, and Administrative and Support and Waste Management and Remediation Services. Together, these make up nearly three of every four jobs in Tigard. While each of these industries employs a substantial number of workers, their role within the broader metropolitan economy varies, as does their growth potential. Based on this analysis and projection, the Professional, Scientific, and Technical Services industry is poised for major growth and will continue to be centered in Tigard. The Health Care and Social Assistance industry, while not currently agglomerated in Tigard, is expected to see high growth and that growth may be something Tigard can capitalize on to increase its share of jobs relative to the state as a whole (the same applies to the Management of Companies and Enterprises and the Transportation, Warehousing, and Utilities industries).

How to use the graph

The graph in Figure 11 shows three different pieces of data. First, the size of the bubble represents the number of jobs in that industry. Then, the graph is divided into four quadrants. Industries on the left side have a smaller amount of total workers than the state average, while industries on the right side have a higher amount. This can give us a sense of which industries are more likely to be based in Tigard and any agglomeration Tigard may have. Industries in the top half are expected to have a higher rate of growth than the average industry, while those on the bottom half will have a lower rate of growth. Tying these together, we can see in the top right quadrant the size of certain industries that are both more likely to be in Tigard and expected to have a higher than average growth rate.

Figure 11. Location Quotient Dot



Data Source: Oregon EMployment Department, Quarterly Census of Employment and Wages, 2019

Tigard's Resident Workforce Specialization

The City of Tigard's residents work in four sectors at a higher rate when compared against the metropolitan average: Wholesale Trade, Retail Trade, Finance and Insurance, and Real Estate and Rental and Leasing, and lastly Professional, Scientific, and Management, and Administrative and Waste Management Services. The increased employment in these industries shows a level of workforce specialization that zoning can complement or regulate against depending on city priorities.

Tigard Compared to Oregon

The City of Tigard has a higher share of residents working in the industry sectors:

- Wholesale Trade
- Information
- Finance and Insurance, and Real Estate and Rental and Leasing
- Professional, Scientific, and Management, and Administrative and Waste Management Services

The City of Tigard has a smaller share of residents working in the industry sectors:

- Agriculture, Forestry, Fishing and Hunting, and Mining;
- Construction
- Arts, Entertainment, and Recreation, and Accommodation and Food Services,
- Public Administration

Tigard Compared to the Metro Area

The City of Tigard has a higher share of residents that work in the industry sectors:

- Wholesale Trade
- Retail Trade
- Finance and Insurance, and Real Estate and Rental and Leasing
- Professional, Scientific, and Management, and Administrative and Waste Management Services.

The City of Tigard has a smaller share of residents working in the industry sectors:

- Agriculture, Forestry, Fishing and Hunting, and Mining;
- Construction
- Manufacturing

Comparison of Tigard's Residents & Industry Sectors

A mismatch exists between Tigard residents and Tigard jobs. While Finance and Insurance, Construction, and Educational Services has the highest agglomeration in Tigard compared to the state, However, Tigard residents are not similarly concentrated in those employment sectors. Specifically, Construction is extremely concentrated in the City of Tigard, yet Tigard's residents are significantly underrepresented in that industry. The City of Tigard's workforce did show a concentration in the sectors of Information; Finance and Insurance and Real Estate Rental and Leasing; Professional, Scientific, and Management, and Administrative and Waste Management Services; and Wholesale Trade relative to state and regional information, while each of the aforementioned categories also showed some level of agglomeration within the City of Tigard relative to the state.

Table 4. Resident Specializations

Industry Color	Sector	City of Tigard	State of Oregon	Tigard / State	MSA % of Worker	Tigard / MSA
Not Included	Agriculture, Forestry, Fishing and Hunting, and Mining	0.9%	3.20%	**0.3**	1.6%	**0.6**
	Construction	4.7%	6.20%	**0.8**	5.7%	**0.8**
	Manufacturing	11.8%	11.30%	**1.0**	12.7%	**0.9**
	Wholesale Trade	3.5%	2.80%	**1.3**	3.2%	**1.1**
	Transportation and Warehousing, and Utilities	4.2%	4.40%	**1.0**	4.6%	**0.9**
	Retail Trade	11.8%	11.70%	**1.0**	10.9%	**1.1**
	Arts, Entertainment, and Recreation, and Accommodation and Food Services	8.3%	9.80%	**0.8**	9.2%	**0.9**
	Information	2.5%	1.70%	**1.5**	2.0%	**1.3**
	Finance and Insurance, and Real Estate and Rental and Leasing	8.8%	5.50%	**1.6**	6.4%	**1.4**
	Professional, Scientific, and Management, and Administrative and Waste Management Services	14.8%	11.20%	**1.3**	13.4%	**1.1**
	Educational Services, and Health Care and Social Assistance	20.8%	23.10%	**0.9**	22.2%	**0.9**
	Other Services, Except Public Administration	4.6%	4.70%	**1.0**	4.5%	**1.0**
Not Included	Public Administration	3.4%	4.60%	**0.7**	3.6%	**0.9**

Data Source: ACS 5 year 2019

Limitations

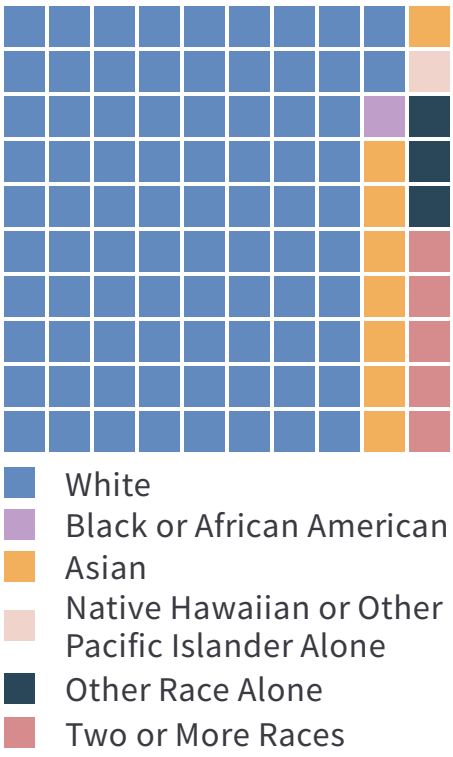
Comparing workforce and industry sector concentration by region is not a perfect analysis that can explain why people choose to live and work in the places they do. Many factors contribute to resident and worker location decisions including resources, economic opportunity, education levels, discrimination, social classes, and personal preference. However, this analysis does show that there is a mismatch between residents and workers, having implications for the application of equity and sustainability. Another limitation in the analysis is the data sources. The location quotients data came from the State of Oregon while data used to calculate workforce sector concentrations came from the American Community Survey 5 year estimates. As such, industry sector categories were not exactly the same and some categories were omitted from Table 4 including Agriculture, Forestry, Fishing and Hunting, and Mining and Public Administration.

Demography

Population, Race and Ethnicity

The City of Tigard is estimated to have a population size of 53,312 residents.[7] Of those residents, 81.9% of residents identify as white and 17.4% of Tigard's residents identified as non-white.[8] Figure 11 shows the racial breakdowns for the City of Tigard's residents. Table 5 shows a comparison between the City of Tigard's residents, workers, and the broader metropolitan area. City of Tigard residents are slightly more white than the MSA, while workers are about 8% whiter than residents.[9] Additionally, there are fewer Black or African American residents in the City of Tigard than the metro region, though there is less of a disparity within the Tigard workforce.[10] Asian residents are the second largest racial group and are slightly more predominant than the MSA average, but Asian workers are less represented.[11] A complete comparison is located in Table 5 below. The analysis is limited as the worker data source, the Longitude Employment Housing Data, did not include a category for the "Other Race Alone." Examining ethnicity in Table 6, Hispanic or Latino residents of the City of Tigard are similar to the regional average, but slightly lower than the average for workers.[12]

Figure 12. Race Waffle Plot



Data Source: ACS 5 year 2019

Table 5. Race

Attribute	Residents	Workforce	MSA
White Alone	81.9%	89.9%	80.2%
Black or African American	1.1	2.8%	3.1%
American Indian or Alaska Native Alone	0.4%	0.9%	0.8%
Asian Alone	8.1%	5.9%	7.2%
Native Hawaiian or Other Pacific Islander Alone	0.8%	0.4%	0.5%
Other Race Alone	2.5%	-	3.2%
Two or More Races	4.9%	3.0%	5.0%

Data Source: ACS 5 year 2019

Table 6. Ethnicity

Attribute	Residents	Workforce	MSA
Not Hispanic or Latino	87.4%	88.6%	87.4%
Hispanic or Latino	12.6%	11.4%	12.6%

Data Source: ACS 5 year 2019

Table 7: Financials

Attribute	City of Tigard	MSA
Median Household Income	$79,809	$74,763
Median Family Income	$99,307	$91,897
Median Value Home Value (Owner Occupied)	$408,400	$380,400
Median Gross Rent (monthly)	$1,243	$1,274
Median Gross Rent as a Percentage of Household Income in the Past 12 Months (Dollars)	32.4%	30.0%
Renter Occupied	38.5%	38.7%

Data Source: ACS 5 year 2019

Highlights:

The City of Tigard has a higher percentage share of white residents than the Portland-Vancouver-Hillsboro Metro Area. However, Tigard's workforce is nearly 10% whiter than the City of Tigard's residents. Meanwhile Tigard's proportion of Hispanic or Latino populations matches the MSA exactly while Tigard's workforce is slightly less Hispanic or Latino.

Tigard's median home value is much more expensive than the MSA but, median gross rent is less than the MSA .

Resident Financials

Table 7 shows the City of Tigard has both a higher median household income and median family income than the MSA. Looking at housing prices, the median home value for owner occupied units in Tigard is almost $30k more than the median home value of the MSA.[13] The City of Tigard's median gross rent is less than the metro area's median gross rent.[14] The percentage of renters in Tigard is almost identical to MSA.[15] However, the median gross rent as a percentage of household income is more than 32% whereas the Metro Area's is 30%.[16] At 32%, this means that the median renter in Tigard is housing cost-burdened, as their housing costs exceed the 30% for determining cost-burden. Further, because housing and transportation expenses are closely linked, these numbers do not consider transportation costs and therefore the cost of living, calculated by adding housing and transportation, could greatly exceed 30%. This is especially true if the main mode of transport for Tigard's residents is single occupancy vehicle.

Spatial Equity

People of Color Concentrated

Tigard's communities of color are concentrated in certain neighborhoods and not evenly distributed, as shown in Figure 13. Many areas with higher concentrations of communities of color are census tracts located directly adjacent to major state and federal roadways. In other areas of Tigard, communities of color live at the westernmost side of Tigard where there is less highway access. These areas are highlighted in purple on the Figure 13 and are called out with text.

Figure 13. People of Color

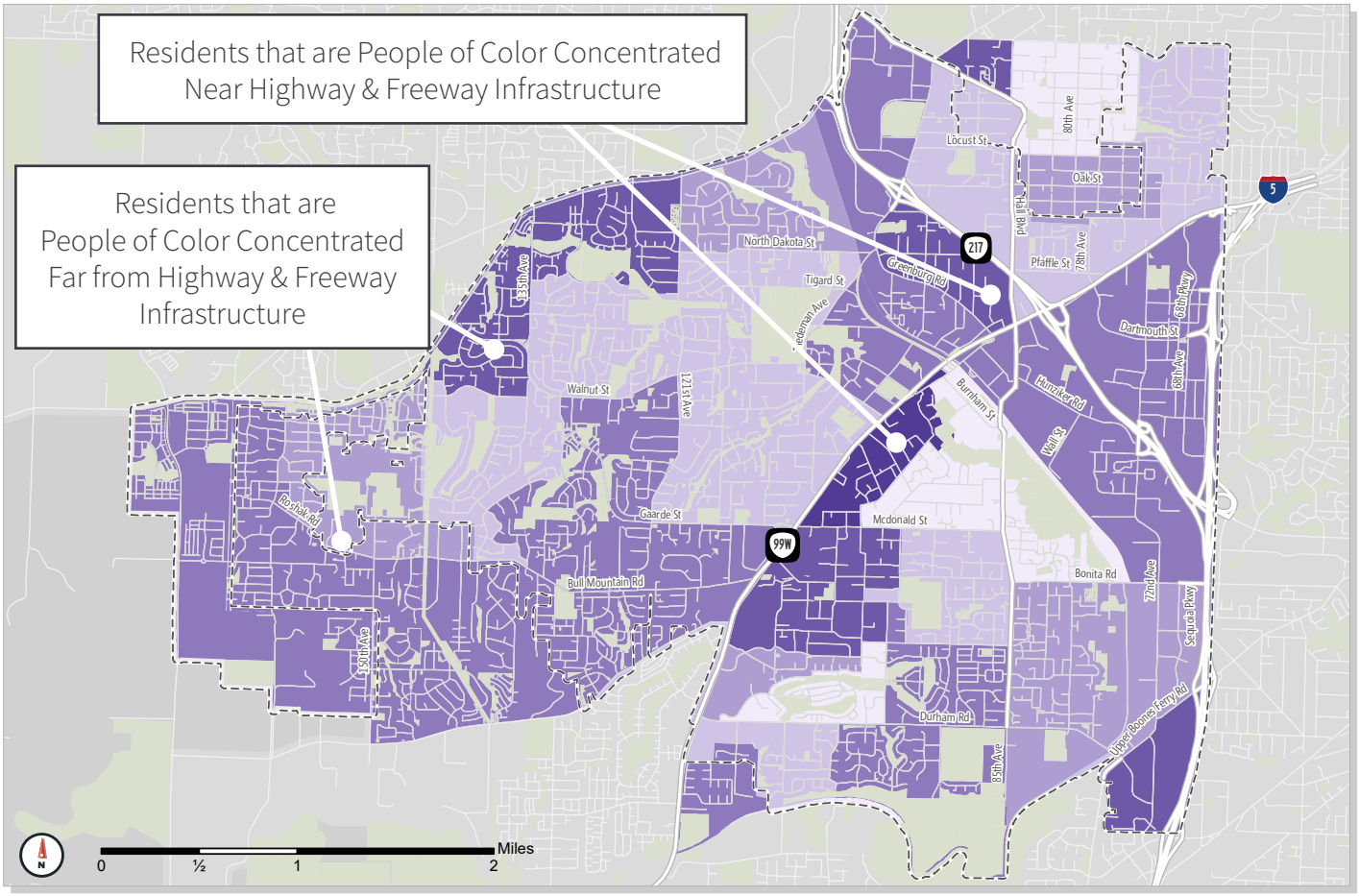
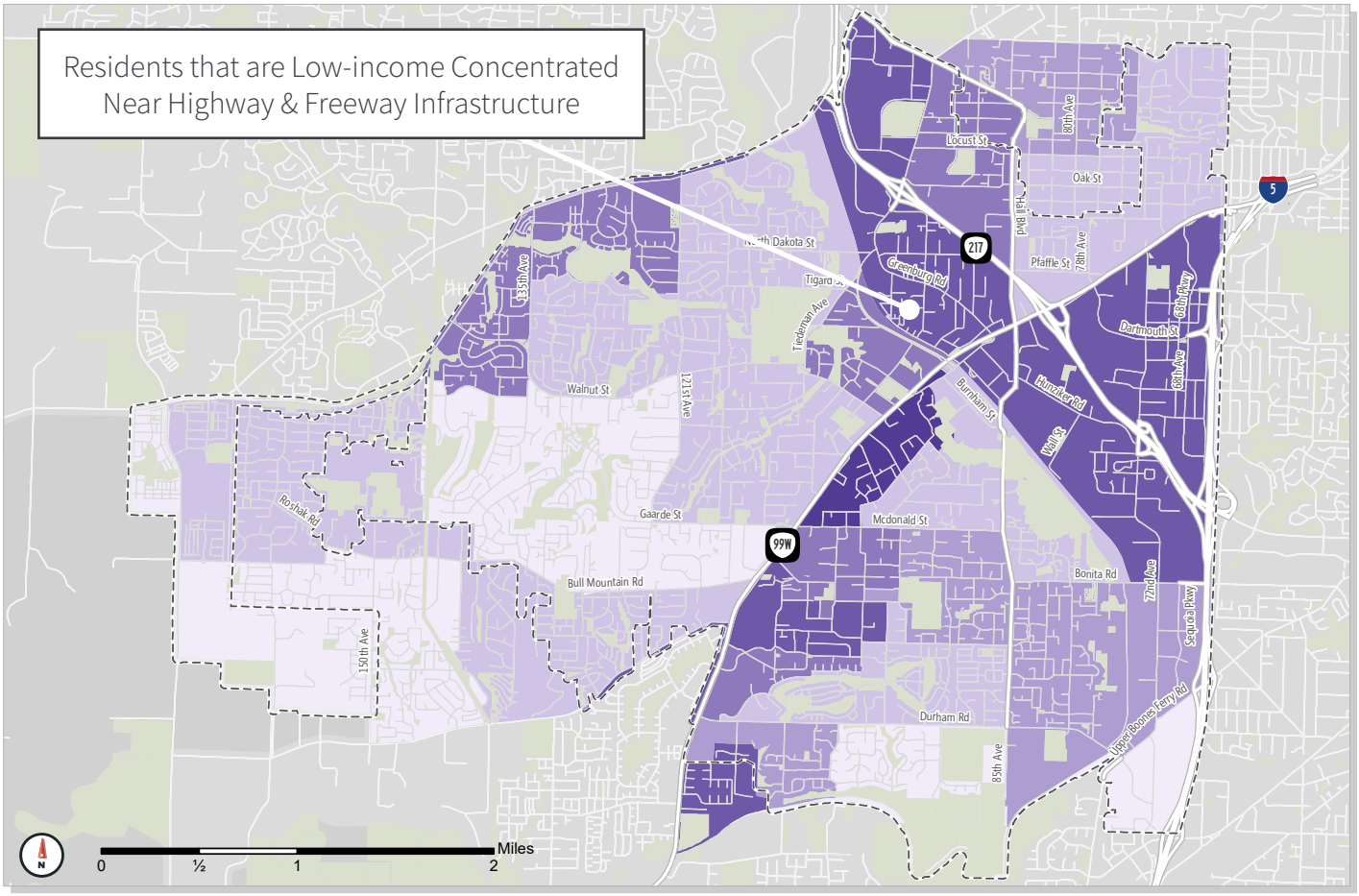


Image Source: Fehr and Peers TSP Existing Conditions 2018

Low-Income Populations

Tigard's low income communities are heavily concentrated along state and federal roadways. These lands also correspond closely with Tigard MADE employment lands. It should be noted that the maps show similar areas inhabited by communities of color and low-income communities, demonstrating the intersectionality of these identities.

Figure 14. Low Income Areas



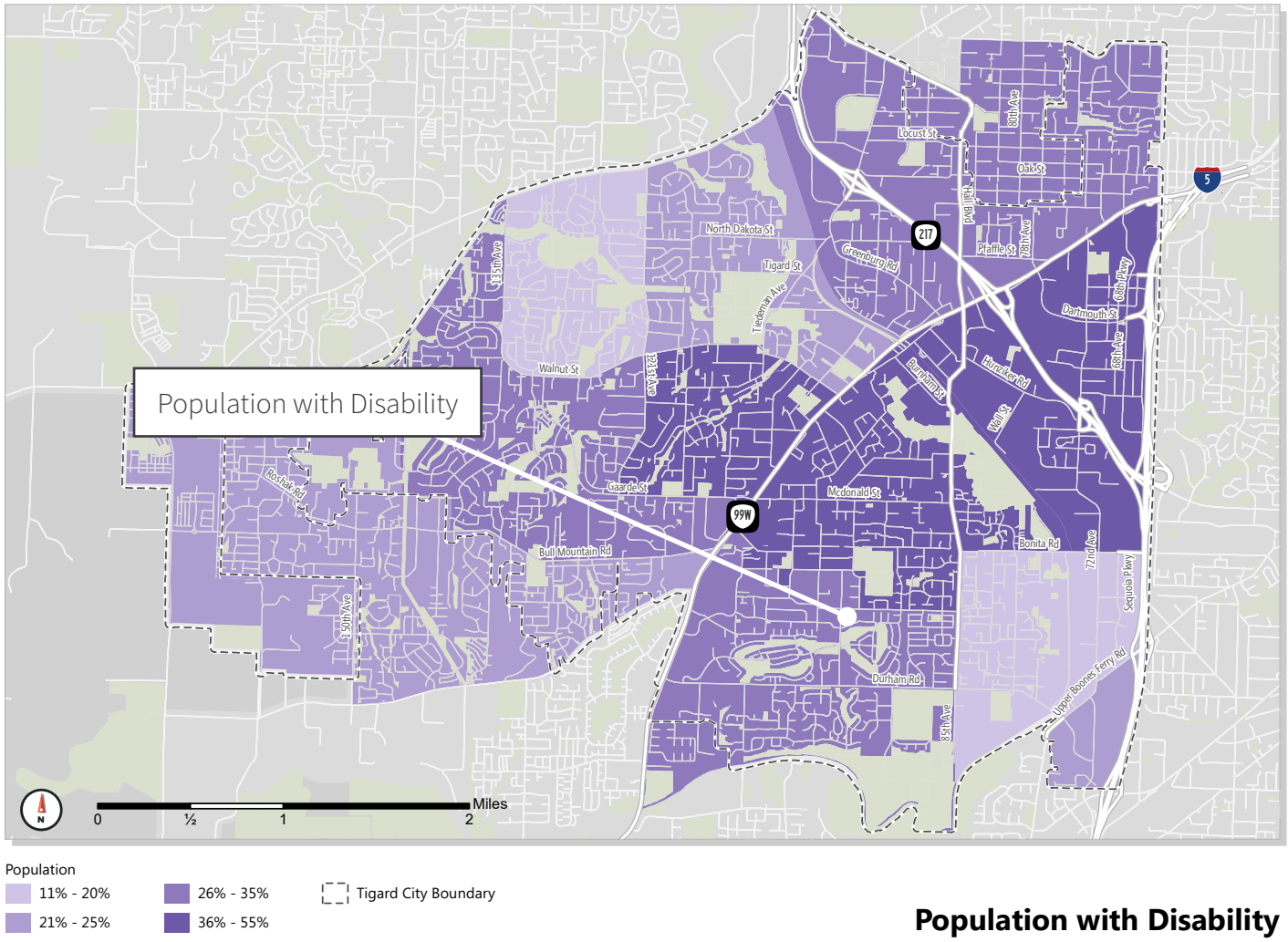
Low Income Population

Image Source: Fehr and Peers TSP Existing Conditions 2018

Age and Ability

People with disabilities are relatively evenly distributed through Tigard with a slight increase in areas directly adjacent to major state and federal roadways, as shown in Figure 16. Seniors are generally shown to reside throughout Tigard evenly with the exception for one very concentrated area, as shown in Figure 15. The youth population of Tigard is spread pretty evenly, though notably there are slightly fewer children located next to state and federal roadways as shown in Figure 17.

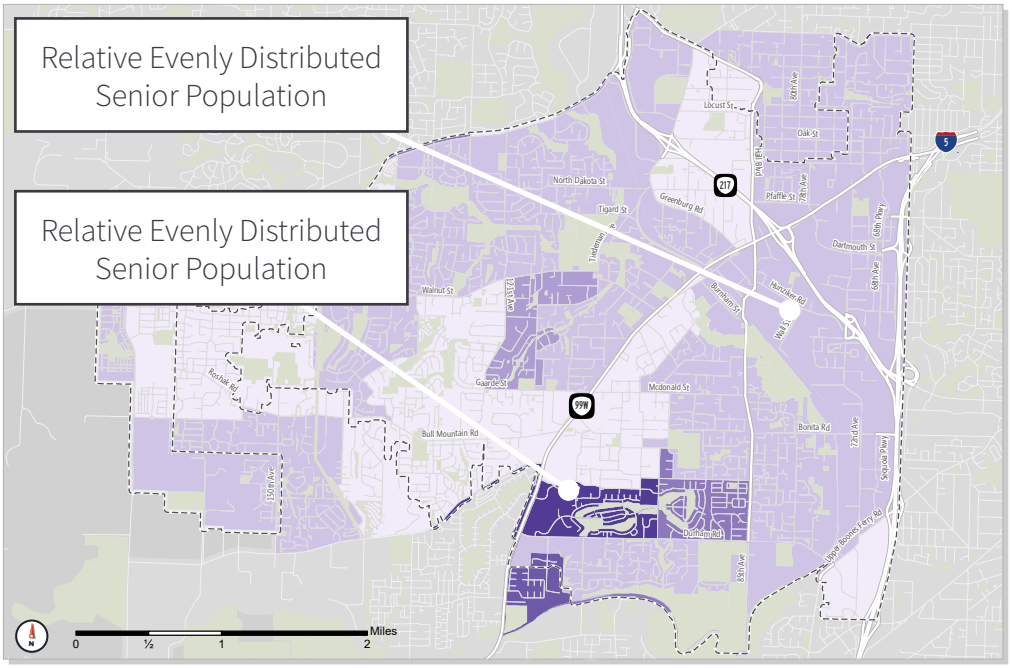
Figure 15. Low Income Areas



Population with Disability

Image Source: Fehr and Peers TSP Existing Conditions 2018

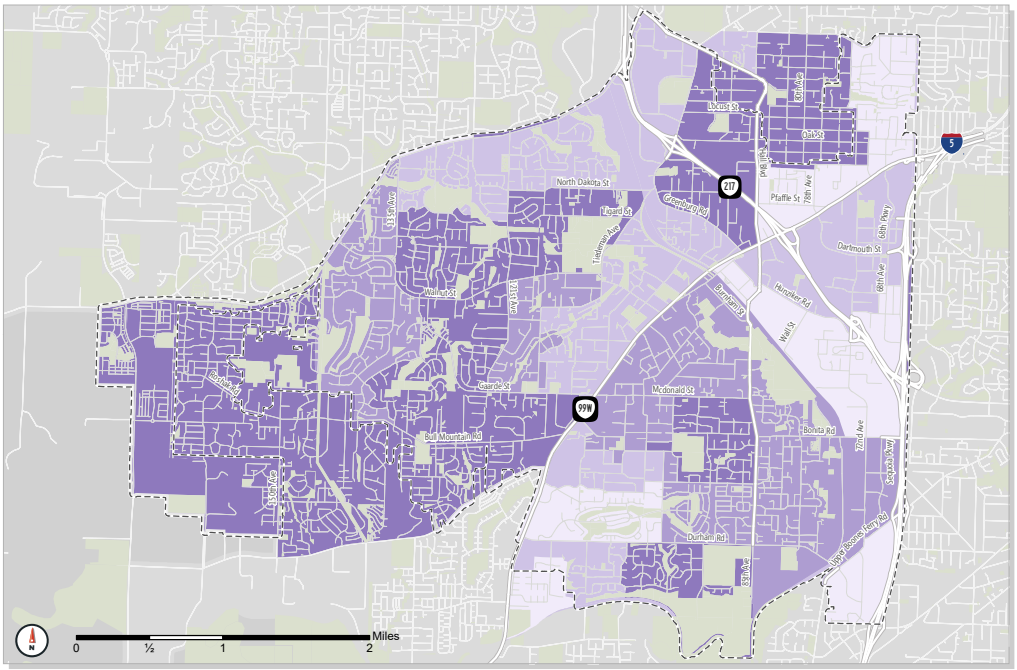
Figure 16. Senior Population



Senior Population (Age 65 and over)

Image Source: Fehr and Peers TSP Existing Conditions 2018

Figure 17. Youth Population



Youth Population (Under age 18)

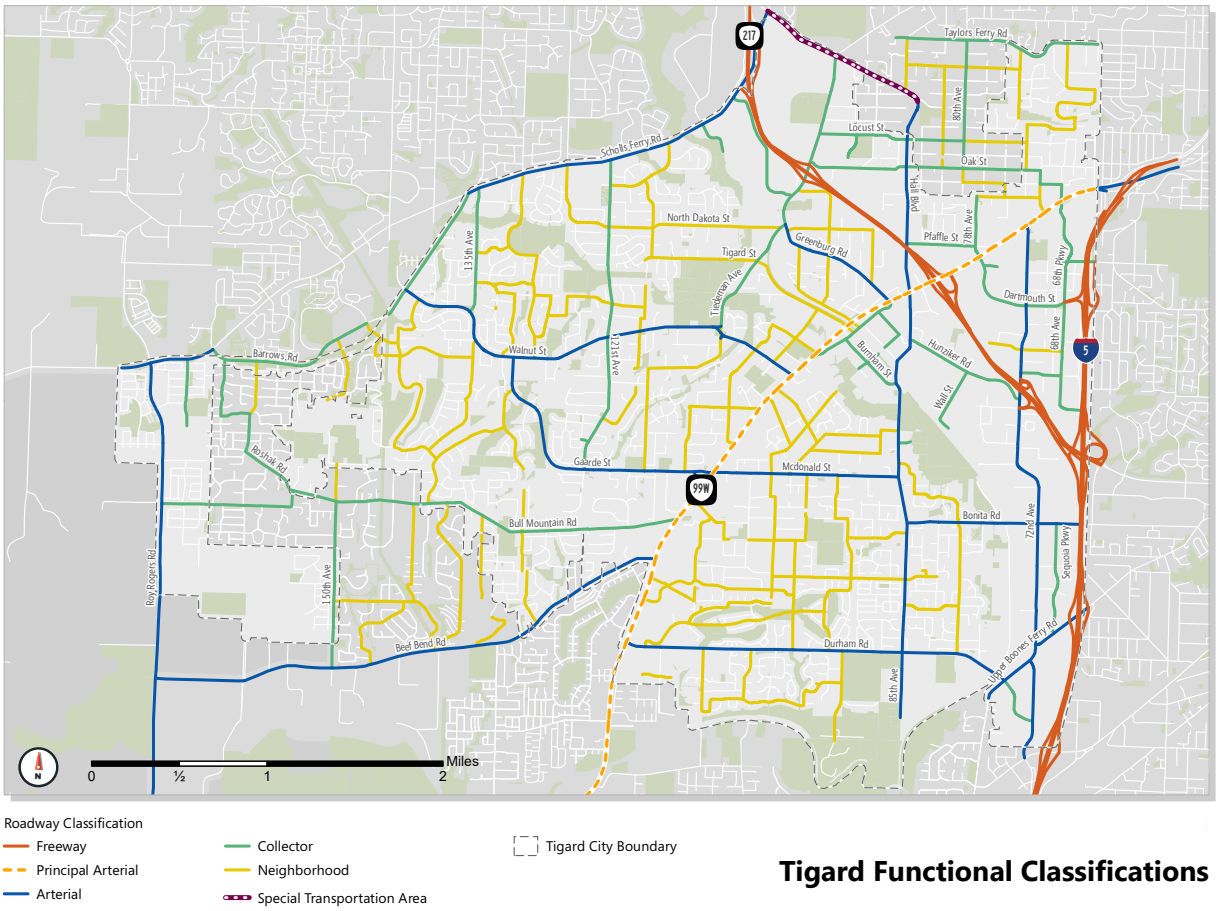
Image Source: Fehr and Peers TSP Existing Conditions 2018

Air Pollution

National statistics from published on by the American Lung Association health effects institute published a major review of over 700 studies from around the world and concluded traffic pollution causes asthma attacks in children and a wide array of effects for those living within 0.2 to 0.3 miles of a highway.[17] Effects ranged from impaired lung function to premature death. Being located next to busy roads including highways or an urban road increased risk to premature death. Further, these impacts are disproportionately pushed onto community of color and low income communities. The City of Tigard is in the process of analyzing local air quality for different parts of the city. Unfortunately, that data is not accessible yet. However, there is no reason to expect different results compared to national trends.

Several major transportation routes exist within the City of Tigard, including Interstate 5, Highway 217, and 99W which run through the City's core. Below is a map of the Tigard's Functional Classification, a way to sort roadways carrying capacity. While the employment lands are adjacent to most of these major roadways, residential areas also exist adjacent to them, raising concerns about resident exposure to both transportation emissions and industry emissions. Land adjacent to the high traffic corridors are more likely to be People of Color and more likely to be low-income seen in Figures 13 and 14.

Figure 18. TSP Functional Classifications



Tigard Functional Classifications

Image Source: Fehr and Peers TSP Existing Conditions 2018

Sustainability

Existing Energy Certification Programs

Currently, there are many different third-party green building and energy efficiency certification programs. Perhaps the most popular and well-known program is the Leadership in Energy and Environmental Design (LEED) program. However, in recent years many other programs have popped up. Some examples include Earthcraft, which is comparable to LEED but with lower certification costs. Regionally, there is the Evergreen building standards program from Washington State. Other programs, such as Passive House, Net Zero Energy, and Zero Carbon certifications have pushed the boundaries for energy efficiency within programs. Subsiding energy efficiency measures, the Energy Trust of Oregon is a nonprofit which provides rebates and incentives for helping utility customers reduce their energy consumption. This section provides a brief overview of all these programs.

LEED

LEED, developed by the US Green Buildings Council, is the most widely used green building rating system in the world.[18] LEED periodically updates to their rating system and currently uses LEED v4. LEED offers six different types of certifications relevant to Tigard MADE lands, which have varying tiers and levels for how efficient the building and surrounding community is. Such programs include LEED for Building Design and Construction, LEED for Interior Design and Construction, LEED for Building Operations and Maintenance, LEED for Neighborhood Development, LEED for Cities and Communities, LEED Recertification, and LEED Zero.[19]

Image Source: LEED (Leadership in Energy and Environmental Design, USGBC (U.S. Green Building Council)

- **LEED for Building Design and Construction** is for new construction or major renovations. This certification also applies to schools, retail, hospitality, data centers, warehouses & distribution centers, and healthcare.
- **LEED for Interior Design and Construction** is for complete interior fit-out projects including commercial interiors and also has applications for retail and hospitality.
- **LEED for Building Operations and Maintenance** is designed for existing buildings undergoing improvement work with little to no construction. This features applications for schools, retail, hospitality, data centers, and warehouse and distribution centers.
- **LEED for Neighborhood Development** is intended for new land development projects or redevelopment projects containing residential uses, nonresidential uses, or a mix of uses. Projects can apply for this application at any stage in the development process from conceptual staging to construction.
- **LEED Recertification** is intended to help maintain and improve buildings with previous versions of LEED certification and can be applied to all projects who utilized the Building Design and Construction or Interior Design and Construction certifications.
- **LEED Zero** is available for all LEED projects under the Building Design and Construction or Operations and Management rating systems or projects registered for the LEED Operations and Maintenance program. LEED Zero is for projects with net-zero goals in carbon and/or other resources.

All projects undergoing LEED certification score points on their application and their certification level corresponds with how many points they earned. Projects that are LEED-Certified earned between 40 and 49 points, LEED-Silver projects earned 50-59 points, LEED Gold is awarded to projects scoring between 60-79 points, and finally, a project needs to earn more than 80 points to be LEED-Platinum.[20] Developers have a wide range of pathways to achieve the different LEED-Certification level that makes the most sense for their individual site and project.

To identify the appropriate rating system, LEED recommends using its 40/60 rule. In general, if a rating system is deemed only appropriate for less than 40% of the project's gross floor area then that rating system should not be used. If a rating system is appropriate for greater than 60% of the gross floor area of the project, then that rating system should be used. If an appropriate rating system is between 40% and 60% of the project's gross floor area, the project team independently must assess their situation to determine which rating system would be most appropriate. [21]

Alternatives to LEED

While LEED is the most widely used third-party energy efficiency and green building certification provider, other programs have emerged in recent years. In 2008, recognizing the difficulties associated with achieving energy efficiency for affordable housing, the State of Washington's Department of Commerce implemented Evergreen Sustainable Development Standards.[22] Other certification programs regarding energy performance by ENERGY STAR have gained in popularity as well. Alternatively, ISO 50001 was developed as a new standard for energy management systems and is based on a model of continual improvement. Lastly, in recent years, additional programs have pushed for stronger building design principles that promote energy efficiency and sustainable building practices. These programs include Passive House, Net Zero Energy, and Zero Carbon.

ENERGY STAR runs a portfolio management program that compares building's energy performance to similar buildings nationwide and is normalized for weather and operating characteristics. A score denotes the building is performing above the national average. This program helps identify the best targets for reducing energy waste, identifies best practices from efficient buildings, and presents the chance to earn ENERGY STAR certification.[23] ENERGY STAR certification is awarded to buildings with a score of 75 (out of 100) or higher and verified annually. This certification is verified by a third-party licensed Professional Engineer or Registered Architect.[24]

Developed by ISO, an independent, non-governmental international organization, ISO 50001 was designed to make it easier for organizations to integrate energy management into their overall efforts to improve quality and environmental management. ISO 50001 provides a framework of requirements for organizations to develop a policy for more efficient use of energy, fix targets and objectives to meet the policy, measure the results, and then review how well the policy works and continually improve energy management.[25] Note: ISO, does not perform certification, and is performed by external certification bodies.

Passive House is a building set to attain a quantifiable and rigorous level of energy efficiency by optimizing energy savings and mitigating energy losses to the greatest extent possible. Certification is done by Passive House Institute US, Inc.[26]

Net Zero Energy aims for a building to combine energy efficiency and renewable energy generation on-site so the structure only consumes as much energy as it can produce. In other words, the building should have a $0 energy utility bill over a year. Certification is done by the International Living Future Institute.[27]

Zero Carbon calls for one hundred percent of a building's operational energy use to be offset by new on- or off-site renewable energy generation. Additionally, all of the embodied carbon emissions impacts resulting from construction and the materials used by the project must be disclosed and offset. Certification is done by the International Living Future Institute.[28]

Energy Trust of Oregon

"[Energy Trust of Oregon is] a nonprofit organization committed to delivering clean, affordable energy to 1.8 million utility customers."[29] The organization was founded in 1999 as a non-profit but supported by legislation and partnerships with the largest Investor-Owned Utilities in the state. Applicable to Tigard, those include Portland General Electric and NW Natural. These utilities pay a percentage of their utility bills to Energy Trust, which then administers various programs around reducing energy consumption by paying incentives to utility customers who take steps to improve their efficiency.

Relevant to Tigard MADE, Energy Trust operates both New Buildings and Existing Buildings commercial programs as well as industrial programs.[30, 31] These programs include myriads of incentives that developers and building owners can access in exchange for completing energy-efficient projects or installing more efficient equipment. Those projects can range from designing a building with better insulation to retro-commissioning an existing building to incentives for the efficient operation of an existing building.

Energy Trust's programs do not directly translate into zoning code. Programs are continually evaluated, refined, and added or excluded based on market changes for different energy efficiency measures and equipment. Tigard can, however, take solace that Energy Trust programs ***may*** reduce costs for energy efficiency requirements that Tigard implements or incentivizes in its zoning code.

Transportation

In Oregon, Transportation is the greatest contributor to greenhouse gas emissions and accounts for 34% of greenhouse gas emissions.[32]

Mode Split

Increasing a mode shift away from cars is one strategy identified in Oregon Statewide Transportation Strategy to lower Oregon's greenhouse gas emissions.[33] Currently, Tigard residents are more likely to drive a car, truck, or van to there primary job more than any other mode.[34] City of Tigard residents are more likely to drive alone to their primary job than the metropolitan region by more than 5% points.[35] City of Tigard residents are less likely to carpool, ride transit , walk or roll to work than the regional average. [36]

Table 8. Mode Share

Mode	City of Tigard	MSA
Drove Alone	75.1%	68.4%
Carpooled	7.9%	9.2%
Public Transportation (Includes Taxicab)	6.2%	7.7%
Motorcycle	0.2%	0.3%
Bicycle	0.5%	2.6%
Walked	1.8%	3.7%
Other Means	0.4%	0.8%
Worked At Home	8.0%	7.5%

Data Source: LEHD 2018 All Jobs

Live / Work

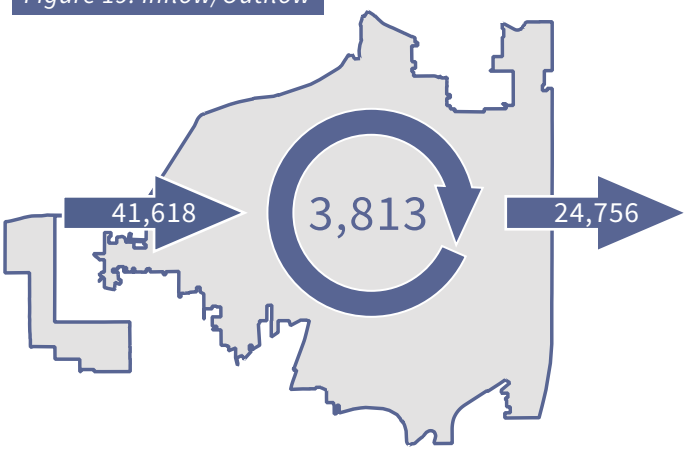
Developing complete communities, which contain jobs, housing, amenities accessible by car alternative transportation options is another identified in Oregon's Statewide Transportation Strategy.[37] Currently, 45,431 people are employed in the city of tigard. 91.6% of the people working in Tigard live elsewhere. 28, 569 residents of Tigard have jobs. 86%7 of Tigard's residents with jobs work outside of Tigard. 3,813 people live and work in Tigard. [38]

Table 9. Commute Trip Generation

Attribute	Resident
Employed in Tigard, Living Outside Tigard	41,618
Living in Tigard, Working outside of Tigard	24,756
Employed in Tigard & Living in Tigard	3,813

Data Source: LEHD 2018 All Jobs

Figure 19. Inflow/Outflow



Data Source: LEHD 2018 All Jobs

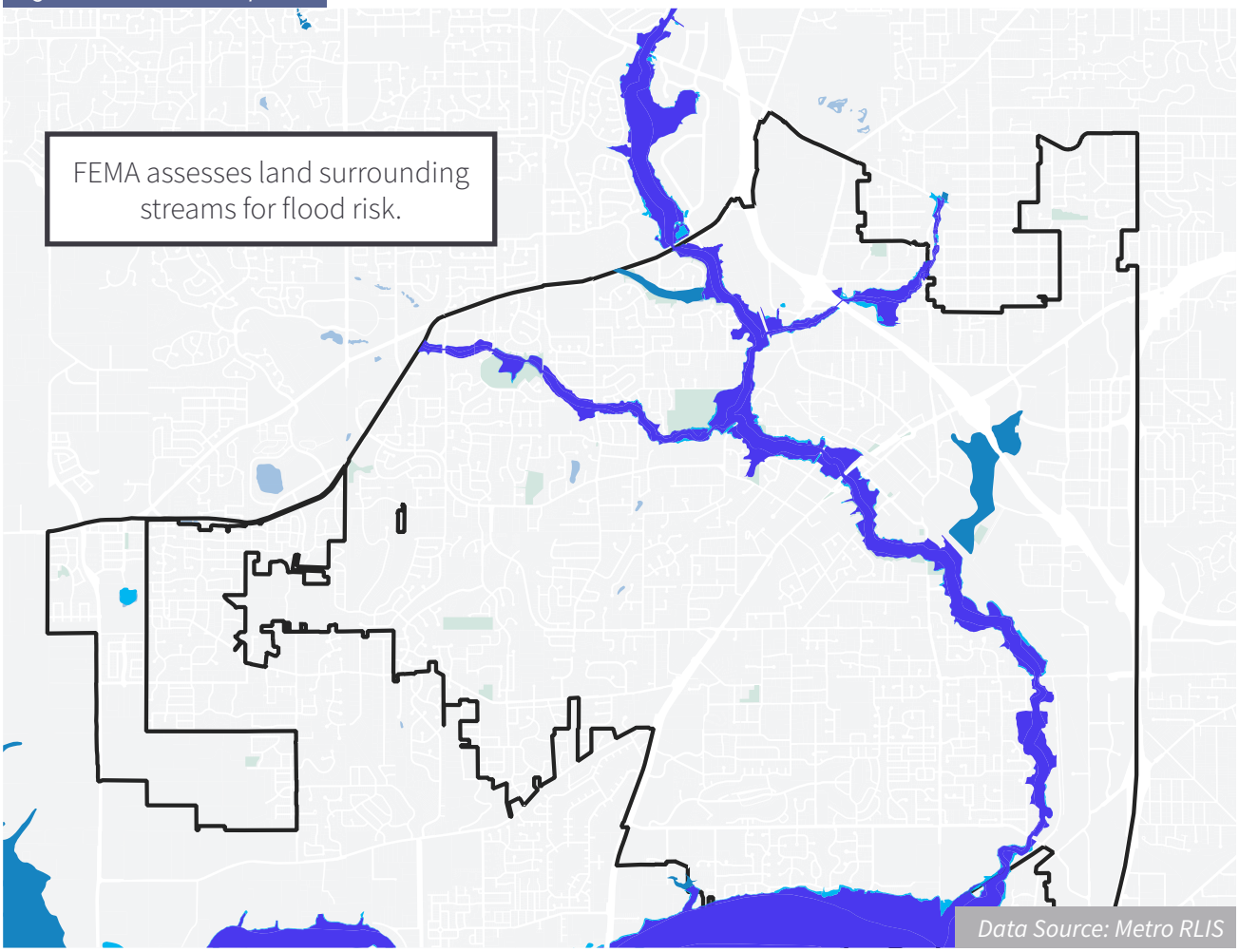
Flood Plains

Fanno Creek flows west and south along Highway 217 before dropping down towards the I-5 corridor. Much of Tigard's employment areas lie within its watershed.

Per the Tualatin River Watershed Council, flooding in Tigard is not well documented. Floods rise quickly following a heavy rainstorm, especially during winter when augmented by snowmelt and saturated soils. They usually last less than one day on Fanno Creek and half a day on Ash and Summer Creeks. Fortunately, Fanno Creek's wide floodplain helps prevent flooding of structures and roads.

Tigard's Stormwater Master Plan states that approximately 75% of the Fanno Creek 3.75 sq. mile study area are at medium to severe risk for overall erosion. The biggest threat is to the infrastructure in the area which includes sewer pipes, the street network and the regional trail. At least one tributary is polluted with runoff from the highway and trash from commercial properties. Capital improvement projects designed to protect channels in Fanno Creek area from the erosive effects of fast and high flows, resulting from the basin's geology and urban runoff, have been proposed but not yet implemented.

Figure 20. FEMA Floodplains



Market Analysis

Real Estate Markets in Tigard, the Portland Region, and Nationwide

Industry reports from major brokerages were available for the Portland region's office and industrial sectors, but not its retail sector. So, local office and industrial trends are discussed below, then high-level national office, industrial, and retail trends are briefly reviewed.

The I-5 South office submarket fared better than the broader regional market during the pandemic [39, 40]

Office vacancy in the I-5 South submarket—which includes Tigard—fell several tenths of a percent between the third quarter of 2019 and the first quarter of 2021. In contrast, the broader Portland region's office market experienced significant increases in vacancy, up more than 4 percentage points during the pandemic. Rising vacancy suppressed region-wide rental growth over that same time period. However, office real estate in the I-5 South submarket bucked the trend, enjoying robust 4% year-over-year growth. Despite these increases, the I-5 South office submarket still rents at a considerable discount compared to square footage available regionally. This makes Tigard an attractive location for businesses with less access to capital.

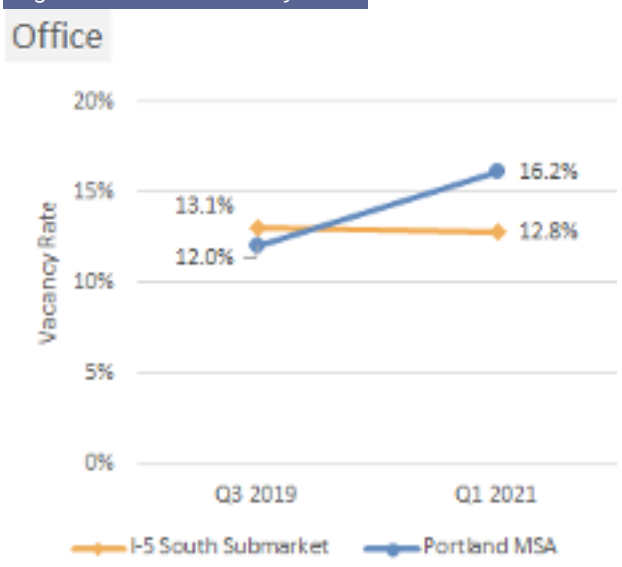
Generally, these rental and vacancy rates bode well for Tigard. They demonstrate strong demand in the submarket thus far in the US's pandemic recovery. Key national trends are discussed in greater detail below to provide additional context on what analysts expect in the near future.

The I-5 South industrial submarket remains low vacancy, with rents equal to the average regional rate [41, 42]

Between the third quarter of 2019 and the first quarter of 2021, industrial real estate in the Portland region experienced low vacancy, in line with the national trends showing the lowest industrial vacancy rates in the past two decades. Low vacancy was especially present in the I-5 South Submarket, which includes industrial areas in Tigard, Tualatin, Sherwood, and Wilsonville. Low vacancy contributed to region-wide rental rate growth, though that growth was more muted in I-5 South. Again, these rental and vacancy rates are good signs for Tigard, demonstrating strong demand in the submarket.

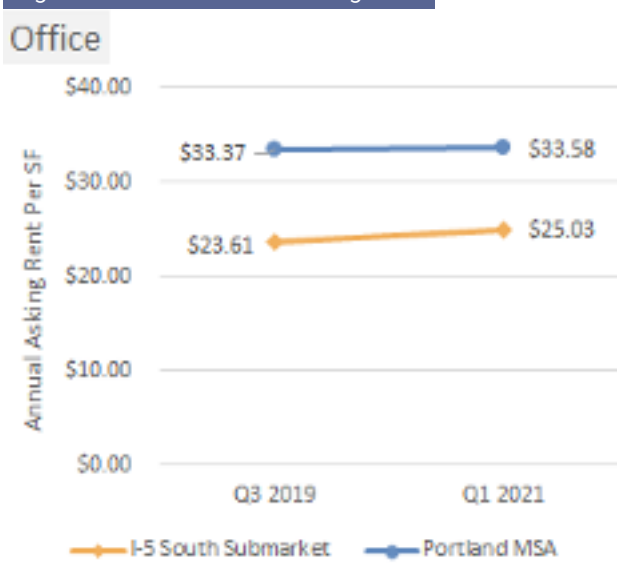
Office

Figure 21. Office Vacancy Rate



Data Source: JLL Portland Office Insights, Q3 2019 and Q1 2021

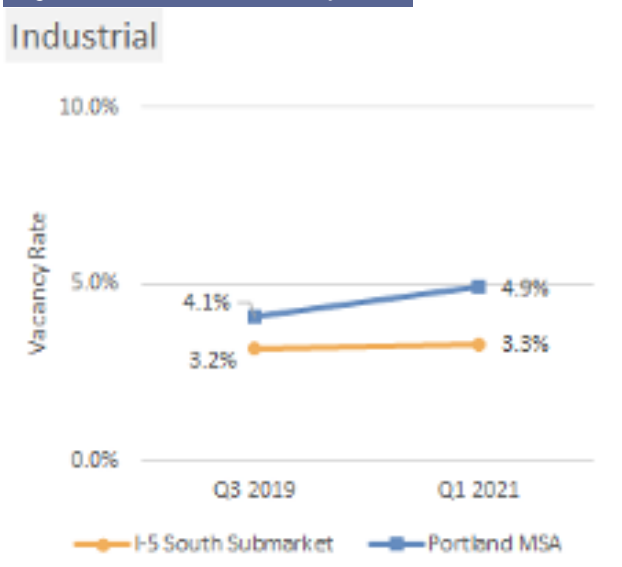
Figure 22. Office Annual Asking Rent



Data Source: JLL Portland Office Insights, Q3 2019 and Q1 2021

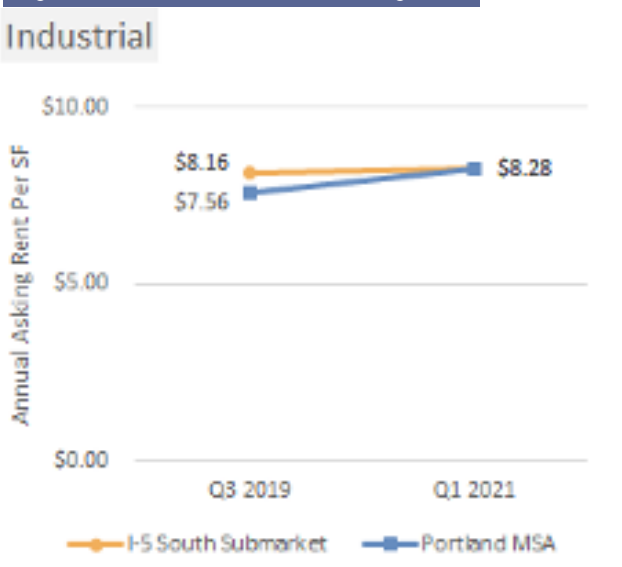
Industrial

Figure 23. Industrial Vacancy Rate



Data Source: JLL Portland Industrial Insights, Q3 2019 and Q1 2021

Figure 24. Industrial Annual Asking Rent



Data Source: JLL Portland Industrial Insights, Q3 2019 and Q1 2021

National Real Estate Trends and Outlook

Office [43, 44, 45]

Nationally, the office market experienced negative net absorption throughout the pandemic, meaning tenants gave up more space than they leased. CBRE, a large international brokerage, expects a 9.5% decline in office space needed relative to pre-pandemic growth rates by 2030. Thus far, the exodus from office space has been primarily present in older, non-Class A (i.e. lower quality) building stock. The City of Tigard should pay careful attention to any such stock in its jurisdiction, as new marketing and reuse strategies may be necessary and require government support or intervention.

Industrial [46, 47]

Industrial products are the darlings of real-estate investors, characterized by pandemic resiliency, long-term leases, and low vacancy. Nationally, industrial real estate experienced one of its strongest years of net absorption in 2020, pushing the sector's vacancy to its lowest rate in decades. In no small part, the rapid rise of e-commerce—now representing over 20% of retail sales volume, up from less than 5% in 2005—is a key driver of this demand.

Retail [48, 49]

Like office, the national retail market experienced sharp negative net absorption through 2020, rebounding at the end of the year. Due to the pandemic, e-commerce, and other structural changes in the sector, CBRE expects a 20% decline in retail space per capita needed by 2025—a seismic shift. It expects this to be driven by conversions of Class B and C (i.e. lower quality) spaces, especially large outdated malls, to other uses. It considers conversions of retail to industrial more likely than conversions to multifamily or office. The City of Tigard should study such conversions in greater depth to understand practically and logistically how they occur and what secondary (especially equity) impacts to expect. The recent NAIOP report on the evolution of warehousing, cited here, is a useful place to start.[50]

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Section 3

PRECEDENTS

Image Sources: Portland, BikePortland; Arlington, Wikipedia; Alpharetta, WGI; Richardson,, Richardson Economic Development Partnership; Pittsburgh, Visit Pittsburgh

ATTUNE
PLANNING

Portland, Oregon - Central Eastside Industrial District

Summary

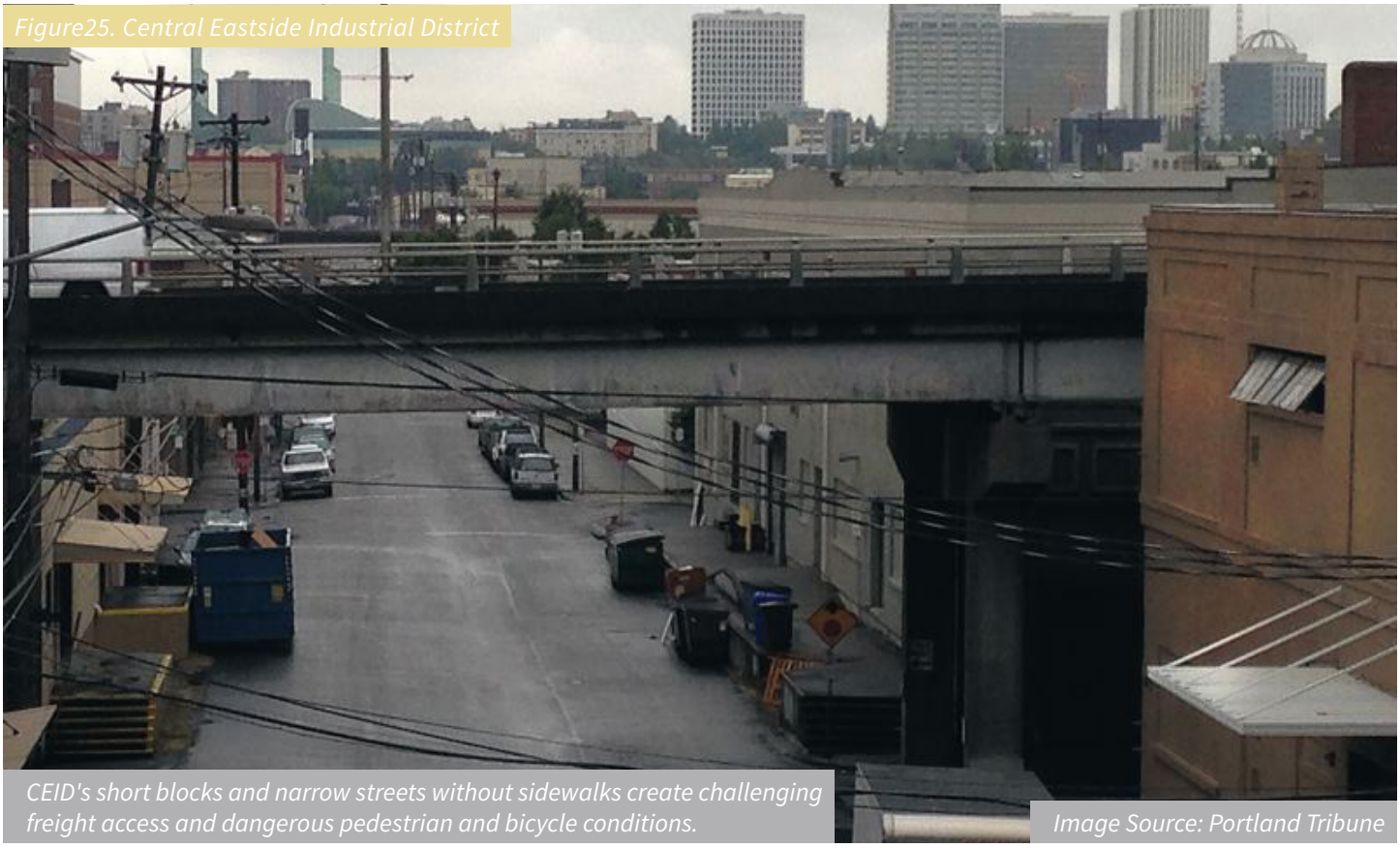
Portland's unexpected growth in employment, combined with higher housing demands, put pressure on the central industrial land. Infill of mixed-use developments and reuse of historic industrial buildings intensified employment density in response to that pressure. However, policies to preserve industrial land tempered such infill and reuse, helping maintain low-barrier, living wage jobs in the area.

Introduction

Portland is the largest city in Oregon and the central city to the suburb of Tigard whose population is less than one-tenth the size. Close enough to commute in either direction, Tigard and Portland share a pool of skilled labor. Portland's role in the regional economy and rezoning of an industrial sanctuary offer lessons on implementing equity and sustainability in zoning.

Portland's Central Eastside Industrial District (CEID), located along the Willamette River across from downtown, is an employment hub with more than 1,100 businesses and 17,000 jobs.[1] The CEID has confronted many of the issues related to encroachment on industrial lands from other uses that Tigard currently faces. The district is almost entirely built out; in 2004 there were only 14 acres of vacant land.[2] The CEID can be accessed by three major thoroughfares: Interstate 5, Interstate 84, and the Grand Avenue/ Martin Luther King Jr. Boulevard commercial corridor. The CEID is one of Portland's oldest industrial areas and features 200-foot by 200-foot blocks. Historically a shipping hub via river and rail, the CEID continues to serve as a major wholesale and central distribution center, and its streets carry high volumes of truck traffic to support freight-related activity. However, this industrial area experiences daily challenges related to freight traffic; the short block lengths and narrow rights-of-way make maneuvering and loading large trucks very difficult. Many businesses conduct truck loading activities in the public right- of-way, using either internal or external loading docks. Often, these loading activities partially block the street and

Figure25. Central Eastside Industrial District



CEID's short blocks and narrow streets without sidewalks create challenging freight access and dangerous pedestrian and bicycle conditions.

Image Source: Portland Tribune

impede traffic. Additionally, a Class I Rail Line – the highest designation – bisects the district. Class I Rail lines are governed by the Surface Transportation Board, a federal agency, and are not subject to Portland's authority; companies operating on these lines are not required to publish any schedule information nor give any notification to local governments, making their congestion impacts difficult to anticipate.[3]

The CEID landscape differs from the Tigard industrial area in that it has small building footprints and a more difficult freight context. In fact, even though the CEID is ringed by freeways, access into and out of the area is difficult, hampered by few off/on ramps and one-way streets.

Recognizing the value of preserving the blue collar jobs within the central city core, the CEID was declared an "industrial sanctuary" in 1981, which essentially limited the use of that land primarily for manufacturing purposes.[4] A few years later, in response to perception of the neighborhood as an area of blight and disinvestment, the CEID was designated by the Portland Development Commission (now Prosper Portland) an Urban Renewal Area (URA). The goals for the URA included:

- development of underutilized land to benefit a diverse range of people and retain the character of the district;
- support existing business, invest in new businesses, and create stable quality jobs;
- revitalize the CEID by supporting a diverse, thriving, and evolving central city industrial district;
- and implement the Willamette River Greenway Plan and increase public access to the river.

Core Employment Land Issue

In 2003, the CEID industrial zones - which included Manufacturing and Production, Warehouse and Freight Movement, and Wholesale Sales - comprised 71% of the total area while General Employment encompassed slightly more than 25% of CEID land area. Only 1.3% of CEID land was zoned for Residential.

At that time, Portland and the Central Eastside Industrial Council (a non-profit, volunteer organization representing businesses and property owners) acknowledged the need to intensify uses of the land due to the development pressures resulting from technological shifts in the regional economy. The Central Eastside Industrial Council advocated to allow nontraditional industrial uses, such as industrial engineering companies or video production, while still prohibiting traditional office uses, such as law firms or dentists' offices. However, provisions that required conditional use approval for more than one office or retail use per site presented obstacles to the redevelopment of older industrial buildings with large internal spaces that could be divided into smaller units. Despite this, building code regulations were often a more significant barrier to redevelopment than zoning codes, especially for adaptive reuse of older and historic buildings; for example, seismic upgrades were required when a building's occupancy changed, making such changes cost prohibitive.

Figure 26. Employment Opportunity Subarea Map

The original EOS zone as implemented in 2005.

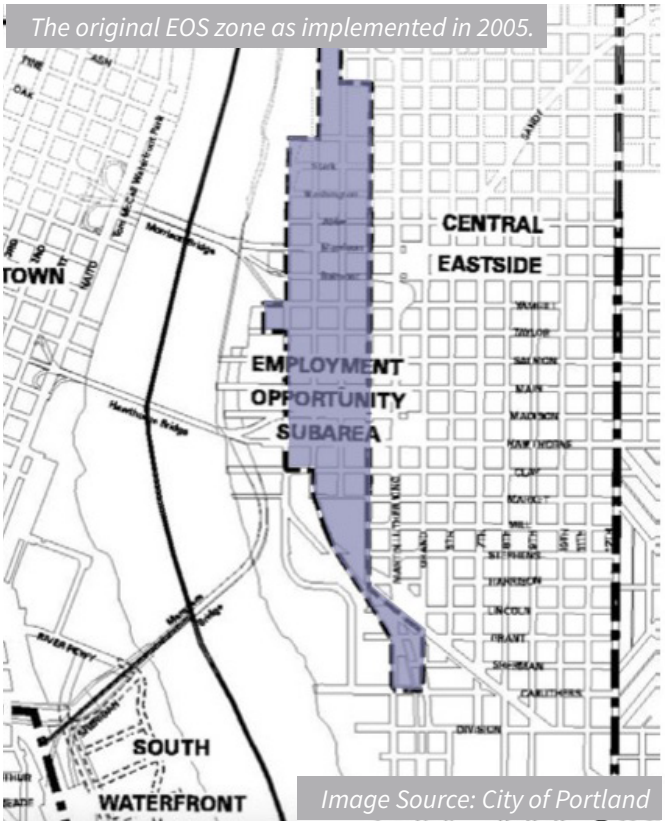


Image Source: City of Portland

As a result of the intensity of industrial uses and aging infrastructure, problems with stormwater runoff generated in the public right-of-way, and oil and other toxins draining into the sewer and/or flowing directly into the Willamette, the City needed to address these issues by constructing the Big Pipe, a massive sewer pipe project completed in 2011 to eliminate sewage releases to Portland's Willamette River and Columbia Slough.

Solutions

The first critical step Portland took was an in-depth analysis of each industrial site that found that much of the vacant industrial land had significant constraints (e.g., environmental, use, or ownership) and only identified a handful of sites that could realistically absorb the immediate industrial demand. By creating "industrial sanctuaries", Portland succeeded in preserving land strictly for manufacturing and heavy industry.

To boost employment in these industrial areas - especially those in inner neighborhoods like the CEID - Portland found it essential to transition from a 20th century industrial district to a modern community of makers and doers. It accomplished this by adding uses like "logistics" (which involves the sourcing of materials and can include many layers of handlers, providers and brokered transactions) to traditional warehousing and distribution and focusing on small businesses centered on technology, design, or research and development. These additional businesses generally require less space, more people, and more tech infrastructure. Placing a priority on cultivating the "human capital" that already exists would preserve and grow middle class jobs. Although there was concern of the area turning into another Pearl District, Portland changed the zoning to help spur the district's economy "without giving developers carte blanche to create office towers."[5]

The City of Portland amended the Central City Plan District (33.510.113C), creating an Employment Opportunity Subarea (EOS) in the CEID. In an effort to support emerging denser job types/businesses while still preserving some industrial zones, the city rolled out new flexible zoning on 48 acres between Southeast Water and Third Avenues. This sub-area allows more office and retail than is typical for industrial zones.

Figure 27. Central Eastside Industrial District

A refurbished industrial warehouse now occupied by Autodesk, an example of the expanded definition of industrial use to include the production of digital goods within the CEID.

Image Source: Autodesk

Designed as a test, the EOS supplemented the existing base zone to create flexibility and allow employment-dense "industrial office" uses (e.g. software development, data processing, web design, and other industries that don't require frequent customer or client visits). By allowing "industrial office" uses to be located in rehabilitated older multi-story industrial buildings that are no longer efficient or desired for traditional industrial and manufacturing, this new regulation provided more flexibility for new emerging industrial sectors seeking "incubator" space to start their businesses. 60,000 square feet of industrial office use (defined as those that focus on the development, testing, production, processing, or assembly of goods and products) is allowed by right, with traditional office as a conditional use.

The EOS experiment was deemed a success and ultimately was incorporated into the broader industrial zone.[6] Portland also purposely limited office and retail to 5,000 square feet each per site, with the intent of preventing industrial gentrification.

In 2010, the Portland Street Plan included the management and treatment of stormwater runoff concentrated in the CEID.[7] This public effort culminated in the SE Clay Green Street Project from the Willamette River to SE 12th Avenue, where strategically placed street planters remove about two million gallons of stormwater runoff annually from Portland's combined sewer system. The project also provided an urban greenway for people who bicycle to the Willamette River through the Central Eastside Industrial District.

To further upgrade the district's overall stormwater management, stormwater-related requirements must now be met by projects proposing new development and redevelopment activities that create or replace 500 sq ft or more of impervious area on property or in the right-of-way, or certain additions to structures within an existing building footprint. Ecoroofs are an approved stormwater management option in the City's Stormwater Management Manual (SWMM) for water quality and flow control.

Tools/Strategies

- Offer System Development Charges (SDC) credit or exception for high-density job-creating uses and below-market rent for incubator spaces.
- Extend and expand URA to assist redevelopment, fund programs.
- Use zoning to keep land affordable and prohibit residential in industrial areas; limit residential and retail except where needed to serve denser employment or along major thoroughfares.
- Increase opportunities for small businesses by allowing the division of industrial space to be partitioned to different companies within one building.
- Provide workforce training and business development and support.[8]
- By improving access to the CEID with streetcar routes, the now-transit-rich area was able to effectively prohibit additional flat parking spaces, meter street parking, and, in 2020, allow shared parking among businesses to intensify use of existing lots.
- Incentive to upgrade/retrofit stormwater management systems to provide watershed and/or system benefits, or reduce stormwater utility charges, by raising the level of stormwater management on their site.

Figure 28. Central Eastside Industrial District Zoning Map

Light grey areas are General Industrial, purple areas Central Employment - which allows a full range of high density commercial, light industrial, institutional and residential uses.

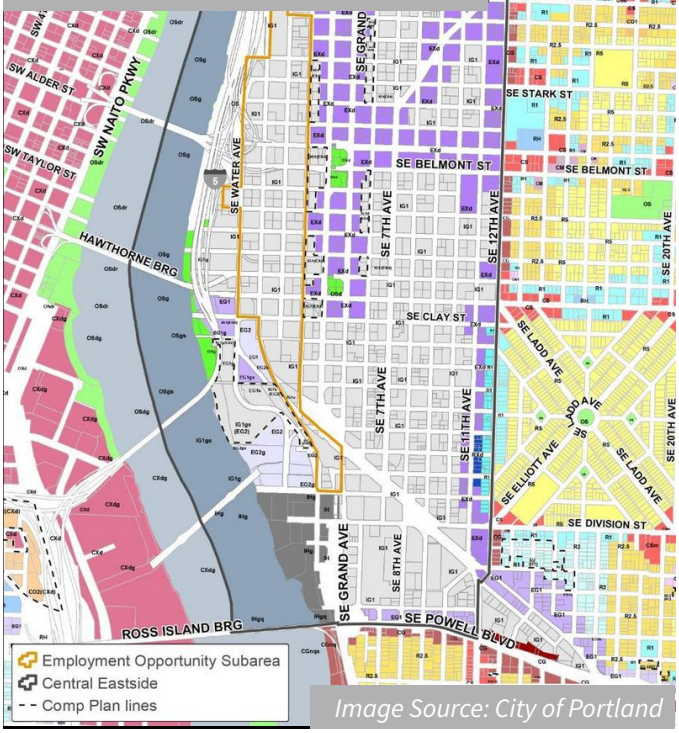


Image Source: City of Portland

Takeaways and Lessons Learned

The allowance to increase the intensity of land use, editing the definition of what qualified as an industrial use, and allowing residential development along major transit corridors led to a revitalization of the CEID area. While the area's existing challenges related to small block sizes and freight difficulty caused some long-time industrial users to relocate to various outlying neighborhoods, smaller entrepreneurial-types of businesses became new tenants and the CEID has become a hub for centralized food production facilities and creative spaces for film production and graphic design. Overall, the CEID in Portland has been successful in maintaining an industrial sanctuary in the heart of the city. However, this case also displays lessons about how incorporating more uses in industrial land can have some unintended consequences.

Key takeaways from Portland's zoning updates include:

Identify the agglomerate industries and take advantage of a dominant workforce pool with existing skills and talents and help resolve a spatial job mismatch by increasing the percentage of residents actually working in Tigard.

Protect the industrial lands and minimize environmental injustices by limiting residential encroachment and focusing mixed use only in key areas located near transit and major thoroughfares. Portland's careful zoning of residential developments has limited the exposure of industrial pollutants to nearby residents.

Acknowledge that the layers of additional zoning, adjusted piecemeal over the years, add complexity to an already difficult permitting process for small businesses.

Allow for smaller tenant spaces for incubator businesses that can grow in place.

Include mandatory environmental cleanups or mitigation as part of the redevelopment process.

Enhance the liveable (workable) qualities and safety of all industrial neighborhoods by **improving the infrastructure with sidewalks, lighting and street trees** that don't impede freight access.

Knowing that parking is always a concern, **consider strategies like shared parking** amongst businesses.

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Arlington County, Virginia

Summary

Arlington County, Virginia has been a pioneer in incentivizing green building practices and energy efficiency standards by offering density (floor area ratio) bonuses for new developments. Enacted in 1999, the Green Building Energy Program has been incredibly successful in leading to the development of accredited buildings and proven adaptable to changes in the market and green building practices.

Introduction

Arlington County, Virginia, often referred to simply as Arlington, is located across the Potomac River from Washington, DC in the Washington, DC metropolitan area. If Arlington were incorporated as a city, Arlington would be the fourth-largest city in Virginia with a population of 236,842.[1] Like Tigard, Arlington is an inner-ring suburb community with some decidedly very urban areas. Arlington's primary industries are quite different from Tigard as Arlington is home to the Pentagon as well as many other government agencies, government subcontractors, several universities, and soon Amazon's HQ2. Much like the State of Oregon, Arlington has been committed to Smart Growth principles since the 1960s as the result of the creation and expansion of the Washington, DC area's Metro subway lines.[2] Arlington's commitment to smart growth and sustainable development led to the county being a pioneer in employing density bonuses for supporting green construction standards and practices.

Core Sustainability Issue

Arlington began their Green Building Density Program at the behest of a county board member who was very interested in green building and promoting sustainable development. Other considerations included decreasing the amount of stormwater draining into the Chesapeake Bay.[3] Over time, a greater emphasis was placed on energy efficiency and reducing vehicle miles traveled to promote greater environmental sustainability.

Tactic to Promote Sustainability

Arlington enacted their first green density bonus program in October 1999.[4] At first, the policy was aimed only at commercial space and offered an increase in a development's Floor Area Ratio (FAR) in exchange for achieving Leadership in Energy and Environmental Design (LEED) Silver Certification. However, in the first few years very few projects successfully applied to the program despite high interest from developers.

Figure 29. Arlington Waterfront

Arlington's downtown, Rosslyn, as seen from across the Potomac River. *Image Source: Arlingtonva.us*

Developers were largely not prepared to complete the certification process to achieve LEED Silver rating.[5] Arlington's program is unique however in that it is not a part of the county's zoning code. This is because Arlington is constrained by Virginia State Law which prevents localities from modifying their zoning law.[6] Therefore, Arlington's program applies only to large projects which require site-plan approval since such projects, which are often clustered around the area's Metro stops, are already applying for zoning variances.

In 2003, the program was updated, strengthened, and expanded. All projects requiring site plans could participate (multi-family residential, rehabilitation of existing buildings, and others).[7] The program also expanded to offer FAR bonuses for all levels of LEED certification. Maximum FAR bonus allowances were designed to be commensurate with the rating achieved, so that a higher bonus could be awarded to projects that achieved LEED-Platinum certification compared to those who were only Certified. Lastly, the 2003 update established Arlington's Green Building Fund. Developers that did not commit to LEED Certification would be charged a fee of $0.03 per square foot. This price was designed to

Table 10. Arlington Incentive Structure: 2014 Green Building Density Program Structure

LEED version 4	Office or Residential*	Two Arlington Priority Credits	Total Bonus FAR Available
Silver	0.25 FAR	+ 0.05 FAR	0.30
Gold	0.35	+ 0.05 FAR	0.40
Platinum	0.50	+ 0.05 FAR	0.55

* Minimum Program Requirements include ENERGY STAR certification for commercial office, 10 years of energy reporting, and ENERGY STAR lighting and appliances for multifamily.

Image Source:Arlintonva.us

match the cost of obtaining LEED Certification and to remove certification cost as an excuse used by developers.[8] If a developer later achieved LEED Certification post-construction, their previous contribution would be refunded to them. The funds collected were dedicated to education and outreach to developers and the community on issues related to green building.[9]

In 2009, the program was further updated and reduced the amount of FAR bonuses that were awarded to LEED Certified and LEED Silver buildings, thus incentivizing higher green building standards. Part of the rationale for this was that the market had shifted since the program was first introduced with green building construction standards becoming more widely accepted. This meant that achieving LEED Certified and LEED Silver certification was much easier than when the program was launched. Additionally, higher maximum FAR bonuses were made available to residential developments in recognition of how much more difficult it was for residential buildings to achieve LEED status. Lastly, the fee charged to developments which did not achieve LEED Certification was increased from $0.03 per square foot to $0.45 per square foot to match the increase in price of LEED Certification. [10, 11]

The program was updated again in 2012 in response to the private market's increasing embrace of LEED and green building. The program was also updated to incorporate new goals as Arlington had recently passed their Community Energy Plan which called for specific reductions in greenhouse gas emissions by requiring a minimum level of energy savings above baseline LEED standards. Potential density bonuses would no longer be awarded to projects that obtained anything lower than LEED Silver certification. Another change was to require developments to submit annual reports about the development's energy usage for ten years. Lastly, site plan developments can request a small amount of additional density for committing to achieve LEED for Existing Buildings Operations and Maintenance (O+M) or ENERGY STAR Building Certification. Arlington offered developers the option between the two for added flexibility.[12]

In 2014, the program was updated to reflect the new version of LEED and instituted other requirements. Commercial buildings were now required to achieve Energy Star Building Certification within four years of occupancy to report on energy consumption. Reporting these energy consumption data to Arlington allows the county to monitor building energy performance via Energy Star's Portfolio Manager. Unlike LEED, which usually concerns green construction standards, Energy Star is exclusively concerned with ongoing energy consumption once the building is occupied.

In 2014, Arlington also introduced priority points which allow additional density in exchange for hitting certain LEED or community preference metrics. Also, an additional bonus was made available to affordable housing projects that used Virginia State Tax Credits and affordable housing developmets were provided the flexibility to obtain EarthCraft certification, an alternative to LEED. Lastly, projects that committed to being Net Zero Carbon would be awarded additional density.[13]

In 2019, a minor update to the program was instituted to allow Zero Carbon Certification instead of Net Zero Energy Certification. In 2020, a major update was passed. LEED Gold is now the minimum certification required to obtain a density bonus, though multi-family developments are still allowed to use the

equivalent EarthCraft certification. Other changes called for specific measures for energy and water efficient appliances, electric vehicle charging, renewable energy, refrigerant leakage, and energy benchmarking tracked via Energy Star's Portfolio Manager in addition to LEED Gold Certification. A major change was to the priority points which now include community sustainability priorities identified by Arlington such as equity, human interaction with nature, light pollution reduction, and bird-friendly design. To incentivize developers to create greener buildings, higher density bonuses of up to 0.7 FAR can be awarded to projects that achieve Passive House, Net Zero Energy, or Zero Carbon, all of which are newer green building certification programs that the market is still becoming familiar with. Lastly, the 2020 update specifies that another automatic update will take place in 2023 to increase the minimum requirements for energy optimization at each level of participation.[14]

Takeaways and Lessons Learned

Arlington has had tremendous success with its Green Buildings Incentive Program. Since the program began in 2001, 146 site plan buildings have been approved, 92 of which achieved LEED certification.[15] Roughly 17 million square feet of development in Arlington has been certified as green in the last 20 years.[16] Additionally since 2009, all residential multifamily projects have achieved at least LEED Silver Status.[17] In recent years, most - if not all - site plan developments have obtained at least LEED Certification. LEED certified developments in Arlington have been estimated to save millions of kilowatt-hours of energy and millions of gallons of water each year. The program has promoted the use of low toxicity materials, instituted nonsmoking requirements, daylighted developments, and created more accessible on-site open space.[18]

Low-toxicity materials
Materials that do not contain chemicals harmful to occupants of the structure

Daylighting Developments
"The controlled admission of natural light, direct sunlight, and diffused-skylight into a building to reduce electric lighting and saving energy."[19]

More accessible on-site space
Arlington County residents have been concerned about the amount of open space that is accessible to the public. If a development is proposed on a site that has been identified for future open space, developers are required to provide it or otherwise contribute to an area's open space inventory.[20]

In recognition of Arlington's success, in late 2017 Arlington became the first city to achieve LEED Platinum status under the LEED for Communities program.[21] Arlington was able to achieve this certification in part due to their green building density program's success and other efforts for promoting sustainability related to stormwater management, ensuring economic prosperity, focusing on education, promoting more affordable housing, greater health, and safety for Arlington's residents and businesses.

Arlington's Success Demonstrates Several Things

Policies will need to be amended and updated over time as market conditions change.

Arlington has gone through several different iterations of their green building density program. Initially, Arlington set their FAR bonus too low for the LEED certification level they were demanding from developers for participation in the program. Through engagement, they determined an FAR level that was more appropriate and would entice participation.[22] Later, as Green Building Practices became more mainstream and they began to recognize different uses needing different levels of bonus, Arlington updated their program accordingly.

A well crafted zoning incentive program can change the market and encourage green building practices to become commonplace.

Over the last two decades, the vast majority of developments going through the site plan review process have entered into agreements with the County and voluntarily participated in the Green Building Density Program.

Arlington shows how a tiered policy is very wise and can be very effective by having built in flexibility for developers.

Developers inherently want flexibility in zoning to develop the types of projects that they think will best serve the market. Through Arlington's tiered system, developers can decide what kind of financial commitment they want to take on for building a green building with a density bonus that is roughly commensurate with the added cost of complying with the program.

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Richardson, Texas

Summary

Richardson's strategic location, just northeast of Dallas, and abundant supply of commercial properties, superior infrastructure, and a stable pro-business governance made it especially attractive to institutional real estate owners and prominent developers. However, overreliance on industrial zoning, an aging building stock and an abundance of parking created the appearance of vacancy and underutilization. Richardson's history as a technology hub and its proximity to the University of Texas spurred demand for glitzy new structures, but not for the aging buildings, so Richardson relaxed zoning codes to create and incentivize flexible space which helped renovate and fill these older buildings.

Introduction

Richardson, TX, located 10 miles northeast of Dallas, is a mature suburb with limited undeveloped land. Texas urban areas are surrounded by vast expanses of unincorporated land with almost no restrictions on greenfield construction.[1] Richardson's land development context and location relative to the urban center make it similar to Tigard despite being twice the size.

The specific area of study, identified as the Collins/Arapaho industrial district, is bound by three major 6-lane thoroughfares: N. Plano Road, E. Campbell Road and E. Arapaho Road. These divided arterials were designed to carry approximately 45,000 vehicles per day. While much of Richardson is considered walkable, this eastern section of Richardson is heavily car oriented, although it does seem to be well served by public transit, including Dallas Area Rapid Transit (DART) light rail which added the Arapaho Center station in 2002.

Known as the Telecom Corridor®, Richardson historically has had a significant presence of communications companies and suppliers. Texas Instruments chose Richardson for their corporate campus in 1956, which in turn attracted other electronics-based businesses to relocate to Richardson - all near US 75, the highway that bisects the city from north to south. Over the past decade, the city's business

Figure 30. Richardson, Texas.

A view of Richardson's Collins/ Arapaho Industrial District, along U.S. Highway 75.

Source: Richardson Chamber of Commerce.

Figure 31. Richardson Innovation Quadrant Map

The range of developer and business amenities provided within the Richardson Innovation Quadrant.

Image Source: Richardson IQ, City of Richardson

community evolved to incorporate innovative new technologies, including software, financial services, defense, and aerospace. With 418 linear miles of fiber optic network in a 27 square mile city, Richardson has one of the most extensive and advanced fiber networks of any city in America.

Employment in computer science and engineering tends to provide higher pay and better benefits, and these jobs are considered more resilient to economic downturns than other private sector industries.

Core Employment Land Issue

By the turn of the 21st century, Richardson struggled with aging development and infrastructure; properties were underperforming due to changes in market conditions, technology and building format, and evolving demographics.

Richardson's biggest economic asset has been its legacy of skills: the tech and white collar workforce. As home to the University of Texas at Dallas, Richardson has a high percentage of college graduates and a constant pool of new labor. Richardson's strategic location - along the highway leading directly to Dallas - and abundant supply of commercial properties have also been attractive features to relocating and expanding businesses.

While developing Richardson's Comprehensive Plan in 2008, city leaders recognized that a significant portion of industrial sites, particularly those with older inventory and with ceilings a little lower than modern industrial uses prefer, had higher vacancy rates (21%) than other areas. Restrictive and outdated zoning hampered development. The city believed an over-reliance on industrial zoning - which comprised 92% of the Collins/Arapaho area and dated back to the district's founding as a supply chain to the telecom industry - might explain the higher vacancy rate. A lack of maintenance inside and out contributed to building perceptions as outdated and less functional, discouraging potential businesses from locating in this neighborhood. And, according to Doug McDonald, Richardson's district planner, simply the huge swaths of (partially empty) parking lots added to the appearance of high vacancy.

Solutions

The new Comprehensive Plan, adopted in 2009, identified six "Enhancement/Redevelopment" zones - including East Arapaho/Collins.[2] This plan was implemented in phases beginning with the Central areas closest to downtown. In 2018, City Council finally initiated the Collins/Arapaho Transit-Oriented Development (TOD) and Innovation District Study to develop a vision, goals and strategies for the 1,144 acre District. Extensive public outreach was conducted during this effort to develop the vision, which proclaimed: "The District will be the Premier Tech Hub in Texas" (later dubbed the Innovation Quarter or The IQ[3]). The overall vision for the District is that it will "continue to be a center for innovation and technology; visually unique and green; lively and active; walkable and bikeable; with the Station Area serving as the primary gateway to the District."[4]

The Collins Arapaho Transit-Oriented Development and Innovation District plan updated the code from Euclidian style zoning (dating to 1956) to form-based zoning developed specifically for this planned community. Many of the established local businesses were "grandfathered in" to preserve the existing economy.

As part of this code update, the city identified "flex space" as being a solution to underutilized buildings.[5] Flex space was defined as commercial property that is flexible/versatile enough in its layout to allow for a variety of office, research and development, quasi-retail sales, industrial processing, high tech or combinations of these uses in a single space. Typical building characteristics included one to two stories in height, with some percentage of space (usually at least half) designed for office layout. The ceiling heights of existing buildings are often up to 16 feet (to allow

Figure 32. Richardson, Texas.

An aerial reference of the string of industrial lands along US Route 75. a 14-lane highway and one of the busiest in the nation. Route 75 bisects Richardson, i mpeding connectivity from east to west..

Image Source: Richardson Chamber of Commerce.

for the racking of inventory for manufacturing, processing or warehouse uses; ceilings can be dropped for office users). These flex spaces also could include grade level or dock high delivery doors conducive to warehouse, showroom or assembly activities.

To better utilize land previously designated for parking and visually improve the cityscape within the Innovation Quarter, new parking policies were implemented. The city eliminated minimum parking for industrial, office, and retail under 5,000 square feet and in other scenarios the minimums were cut in half (i.e hotel parking per guest room). Shared parking is encouraged and modifications to reduce onsite parking spaces can be requested.

An important aspect of this planned development was the inclusion of publicly accessible open public space to enhance quality of life for residents, visitors and workers in each of the four sub-districts, but especially within the Employment Sub-district. Open space is required by the zoning ordinance for each lot. Developers could choose whether to set aside a minimum of 15% of the lot as open space for private use, or if used as public space at least 8% of the total lot size. The open space was designed for easily accessible recreation areas and inviting gathering spaces especially for employees before, during and after their work day. Planners understood that prominent natural features are valuable assets and these green spaces provide visual breaks in the built environment. Another priority considering green spaces was the appropriate placement of public art in accordance with the Richardson Public Art Master Plan.

To enhance connectivity, the plan includes a greenway that connects to the various neighborhoods, areas, trails, and parks within and to the Innovation District. A road diet was imposed on the six-lane highways, which were re-envisioned to support pedestrian oriented needs within the community. This new “Parkway” street-type has been incorporated into the code, features a four-lane, divided arterial with bicycle facilities.

Richardson finds itself in a competitive situation with nearby cities in North Texas.[6] To encourage new development, incentives are evaluated on a case-by-case basis rather than by formula. Richardson creatively customized its incentive packages to maximize benefits that are of greatest value to the specific company and project based on: taxable value creation, quantity and quality of jobs, growth potential, and compatibility with existing business base. Understanding that some projects may need significant infrastructure upgrades including new roads or sewer lines, some incentives have been identified as tax abatements, fee waivers, no impact fees, and "Freeport goods" exemption.

Takeaways and Lessons Learned

Understanding the need to preserve and grow their employment opportunities and recognizing the amount of unused space dedicated to parking, city planners looked for ways to increase density. They realized that by allowing flex space they could renovate much of the existing building stock. Richardson also capitalized on the existing pool of tech workers and partnered with the University, by sharing a city-owned facility developed as incubator spaces for start up businesses.[7] As a result of this effort, developers have started to embrace this flex space. Commercial vacancy was quickly reduced to 7.5% from an all time high during the downturn from 2001-2003 when vacancy exceeded 35%.

Empty parking lots contribute to the appearance of vacancy, discouraging private reinvestment. The Collins/Arapaho TOD did increase transit and pedestrian access to employment areas; however, extensive parking lots and a lack of connectivity between districts continued to hold back development. By cutting the parking requirement within the TOD in half, Richardson encouraged redevelopment and expansion, creating room for start-up and scale-up businesses.[8]

Flexible space adds to the city's economic resilience. Despite a destructive tornado in 2019 and subsequent pandemic, the Richardson Chamber of Commerce is touting some of 2020's biggest economic developments including additional office space leasing for businesses growing and relocating, and building a one million square foot manufacturing facility for Texas Instruments. This manufacturing facility adds diversity to the job mix available in this industrial district.

Look at your demographics and be inclusive when adopting new policies. Recognizing that as of June 2020 approximately 10% of Richardson residents were Black but that the makeup of City Council was all white, the City of Richardson adopted a statement of equality and intends to "amplify the city's commitment to inclusivity and diversity." Richardson could make an even greater effort to address racial and social injustice with additional resources to create opportunities for minority entrepreneurs.

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Alpharetta, Georgia

Summary

A prosperous outer suburb of Atlanta, Georgia, until recently Alpharetta was mainly a bedroom community with approximately three-fourths of its land dedicated to single family homes in isolated planned communities. Although the largest industries and highest paying jobs are in professional, scientific, and technical services along with manufacturing, Alpharetta's zoning codes had hampered its growth. In response, the City decided to link the residential and commercial areas together with a five-mile trail and a bike network integrated with city streets. To accomplish these goals, Alpharetta directed city resources and established incentives to not only bring large scale development to Alpharetta, but also get developers motivated to build sustainably.

Introduction

With twice the land area of Tigard, Alpharetta is a fast growing suburb of Atlanta, Georgia. Located 27 miles to the north of downtown and nestled against the foothills of the Blue Ridge Mountains, Alpharetta was once defined by its cotton farms and mercantile stores. More contemporarily, Alpharetta identifies itself as the "Technology City of the South" with one of the largest concentrations of technology companies in the US. Counting more than 700 tech-centric companies in the city, including data centers, network solutions, software engineering, and payment processing, Alpharetta's appealing housing options and high quality of life has made it extremely attractive as a location for corporate headquarters in technology and support services.[1]

Much of Alpharetta is zoned as CUP - Community Unit Plan - a planned mixed-use district that allows the combination of residential uses, neighborhood shopping use, or office and institutional use in accordance with a specific concept plan. The majority of Light Industrial zoned lands are located sporadically along US Route 19 (nicknamed the Alpharetta Autobahn).

The City of Alpharetta is located on a slight hill; it drains in multiple directions towards a variety of streams and waterways. Due to the city's geography and location, Alpharetta is particularly susceptible to flash floods where streams and creeks can rise quickly out of their banks, even when it is not raining. One of the major sustainability challenges to infill development downtown is managing stormwater.

Figure 33. Downtown Alpharetta

Alpharetta's historic downtown looking towards the new Avalon mixed-use development.

Image Source: Awesome Alpharetta

Core Employment Land Issue

A prosperous outer-ring suburb of Atlanta, Alpharetta's zoning codes hampered its growth. Until recently, Alpharetta allowed no densities higher than ten dwelling units per acre, with approximately three-fourths of its residential land devoted to low-density residential use. Much of the development occurred outside of the downtown core; new commercial and business development prospered along the highways and the importance of Downtown Alpharetta as the central business district waned.[2] Additionally, many of the commercial and industrial lands are highly segregated from residential land and downtown. Although considerable space is devoted to retail, the largest industries and highest paying jobs are in professional, scientific, and technical services along with manufacturing. Tigard similarly has considerable employment numbers in these sectors.

Like Tigard, Alpharetta has a resident-jobs mismatch. Alpharetta's population nearly doubles in size during working hours totalling more than 122,000 in daytime population. The additional 60,000 plus people commuting into Alpharetta for work suggests a spatial mismatch between residents and jobs.[3]

Alpharetta is facing several other issues that can be seen in Tigard as well. Office and Industrial spaces were disconnected from the downtown walkable areas. Bordered by major thoroughfares, these areas lacked pedestrian access, tree canopy and greenspace. Next, due to the natural slope away from the central city core, there is a need to mitigate the potential for flooding in adjacent areas and to foster stormwater retention and detention strategies necessary to construct a more clustered, connected, and walkable downtown.

Solutions

Through a lengthy engagement process with the community that included stakeholder and business owner interviews, interactive public meetings, property/business owner meetings, and an online survey, the Alpharetta City Center was envisioned as a 26-acre mixed-use destination. Developed as a private/public partnership, the Alpharetta City Center expanded the existing downtown historic district by six city blocks. The success of this project inspired the Avalon - a resort style luxury community.[4]

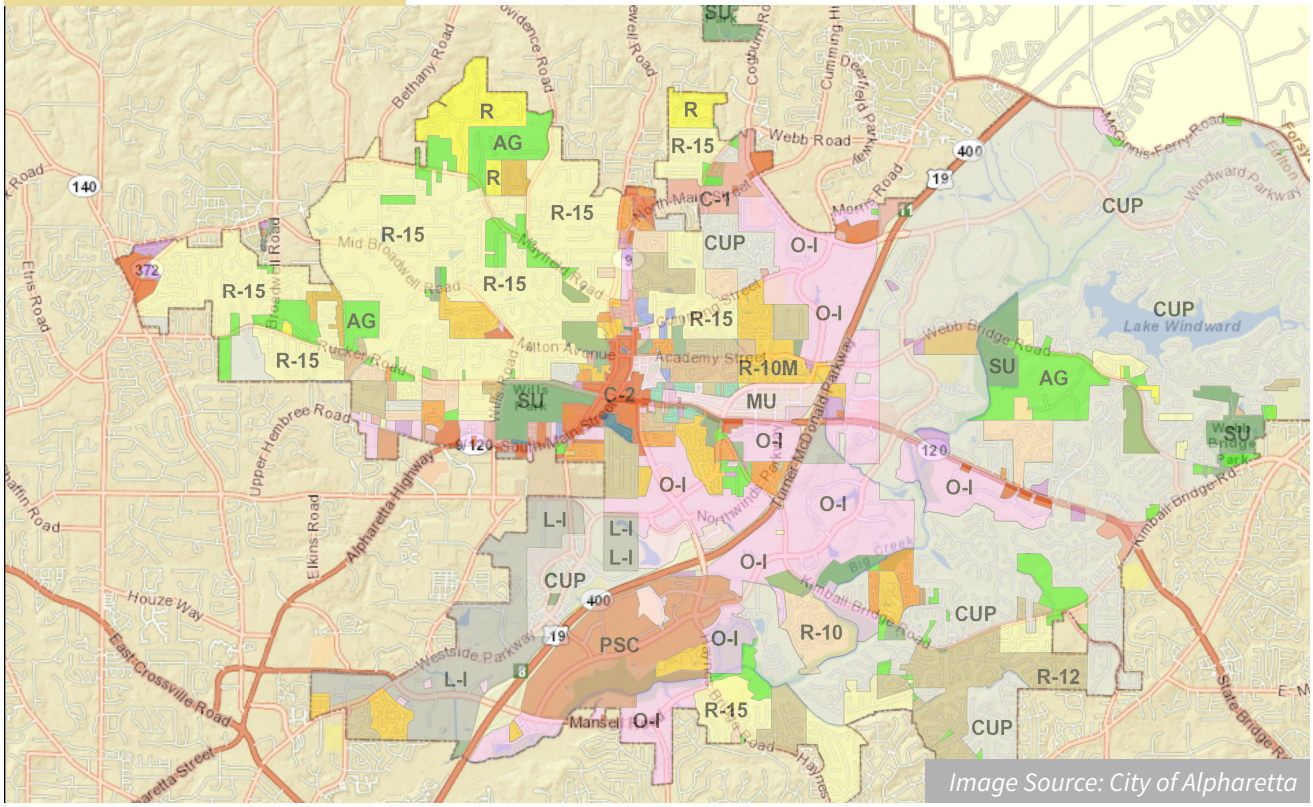
Funds from new developments helped implement numerous bike and pedestrian infrastructure improvements, including the highly touted Alpha Loop.[5] A 12-16 ft wide multi-use trail, the Alpha Loop (inner loop - 3.25 miles and outer loop - 5.25 miles) connects 3 distinct mixed-use nodes - Alpharetta's downtown district, the Avalon and Northwinds, a 150-acre office park - each approximately one mile from the other. The Alpha Loop was realized by taking advantage of unused city right-of-way and Georgia Power Transmission Line easements. Additional easements for the trail are required via zoning conditions within the public hearing process.

In lieu of impact fees, Alpharetta encourages developers to build their own sections of the Alpha Loop. This tactic has proved tremendously successful; developers build the trail to specs, but frequently add amenities to further boost the value of their properties.[6] The city also benefits by the savings incurred with private investment versus city developed trails. For example, in exchange for a variance, The Hamilton (a boutique Hilton hotel) gave the city a 10-foot pedestrian easement behind the building to serve as a public pathway. Another commercial real estate firm, which owns office buildings near North Point Mall, has also offered land easements to the city to assist with construction of sections of the loop.

Alpharetta adopted incentive zoning to protect development rights and surrounding residential uses, providing for more types of residential structures, better overall synergy of complementary uses, and highlighting the historic nature of downtown. Incentive zoning now allows greater development flexibility downtown for new commercial and residential developments.[7] Popular incentives include increases in building heights and relaxing parking minimums. These conditions increased the retention of land uses in historic structures without hindering new development. A mile from the downtown core and connected by the Alpha Loop, the Avalon is a $600 million, 86-acre development with 500,000 square feet of retail, 800 single-family homes, office space and apartments, and a newer 10-story office stack. Since 2014, the Avalon has created 4,500 jobs, boosted nearby property values, and, according to developer North American Properties, "influenced surrounding commercial investment and generated $17 million in annual tax revenue." All this new development has created a wealthy community. "If you divide our tax digest of $6.3 billion with the number of people who call this home, we have the highest property tax digest per capita in the state," stated Mayor Jim Gilvin in March of 2020.

Despite the success of these developments, Alpharetta is not providing adequate housing for low-wage workers who commute into the city

Figure 34. Alpharetta Zoning Map



for work, presenting an equity gap. Only 6% of the city's workforce lives in Alpharetta. Recent developments have created a broader range of housing options including stacked rental units, condominium units, small lot single-family, and townhouses to provide more housing for the area's workforce to help mitigate some of the area's traffic and congestion issues.

There have also been efforts to encourage area businesses to hire workers who reside in Alpharetta. The city's Development Authority established a Local Jobs Creation Grant program where for each qualifying, full-time job that is created and filed by a current resident the city will pay a direct grant of $250-500 per new employee up to a maximum cumulative amount of $80,000. Georgia also offers the Quality Job Tax Credit to address inequities in types of available jobs.[8]

Alpharetta's stormwater strategy incorporates a variety of tools involving: increasing the capacity of existing detention ponds where possible; adding new, regional stormwater facilities in problem and redevelopment areas; incorporating new standards and strategies to allow and promote the use of cisterns, bioswales, and permeable paving in the downtown area. For developments close to a stream, lake, ditch or other water body, a riparian buffer between twenty five and one hundred fifty feet must be preserved either in their natural undisturbed state or enhanced with native plantings to prevent erosion. Alpharetta views stormwater management as an asset rather than a problem. By actively promoting the possibilities of greenspace creation, Alpharetta has instilled enormous developer and community buy-in.

Spurred by the popularity of the Alpha Loop, a new extension of the trail will connect downtown to the North Point Mall, an aging shopping center and now-designated ecodistrict. To update the outdated indoor mall surrounded by 215 acres of parking, this new mixed-use development will require green building practices, feature an active stormwater collection pond combined with green space (pathways and pocket parks) and event space. This segment of the Alpha Loop will ultimately lead to the 20-mile long Big Creek Greenway.

In addition to the numerous incentives Alpharetta offers for green building in North Point, Alpharetta offers expedited plan review, plans processing and site inspections for all LEED, EarthCraft, and EnergyStar certified projects citywide. Alpharetta also requires new buildings to comply with the Night Sky requirements, which sets a standard for outdoor lighting, minimizing light pollution. For example, all exterior light fixtures are required to be shielded and must be positioned either directly toward the ground or at no more than a 45 degree angle.

Takeaways and Lessons Learned

Much of the success of Alpharetta is predicated on preservation of historic structures and new infill development that retains a similar character. Zoning updates resulted in the Alpharetta City Center mixed-use project, pedestrian and bike improvements along Highway 9 and Haynes Bridge Road streetscapes, new parking opportunities through metering and a mixed-use parking structure. Recently completed walking/biking trails connecting the major districts, along with high-end retail and boutique hotels, and the expansion of public spaces for special events improve liveability and increase tourism draw from nearby Atlanta.

Connecting neighborhoods together via green space with multi-use trails creates healthier communities and attracts additional development.

Alpharetta has successfully utilized the Alpha Loop as a marketing campaign, helping to brand the city and create development opportunities that capitalize on the idea that people want to live and work in places close to accessible natural recreational space.

Adopt incentives to keep job quantity and quality.

A Bloomberg analysis based on 2018 U.S. Census Bureau calculations and the distribution of household income ranks nearby Atlanta the most unequal large city in the United States. Alpharetta is attempting to mitigate this issue by offering incentive programs both for increasing the overall number of jobs, jobs going to residents, and the quality of jobs assessed by salary.

Implement developer incentives for public access to trails and stormwater management.

Creative stormwater management acts as a natural element, helping to create parkscape and increase a city's green infrastructure. Alpharetta has enhanced sustainability by acknowledging past and current flood issues and creating a plan to mitigate for future stormwater surges. While implementation has largely relied in the past on public funding, Alpharetta has discovered that incentivizing developers to build nearby sections of the Alpha Loop has both succeeded in building the trail quicker and cheaper than if the city had managed the construction on its own.

Be wary of residential encroachment when allowing unlimited mixed-use, especially with highly attractive amenities like the Alpha Loop.

By allowing residential in all the employment zones, Alpharetta could see land value increase and residential development rapidly encroaching on employment lands. If allowed, housing may push out manufacturing businesses, which need larger spaces but also provide low barrier jobs with liveable wages.

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Pittsburgh, Pennsylvania

Summary

In 2018, Pittsburgh enacted its first comprehensive rezoning of riverfront land in many years. This rezoning effort addressed flexibility in development and better connections for residents to the river fronts. To ensure that new developments provided public amenities, Pittsburgh crafted an incentive structure embedded into their zoning code, offering a density bonus in exchange for those amenities. Pittsburgh presents many lessons on how to protect industrial users from encroachment of other uses while pursuing incentive-based zoning.

Introduction

Located in Western Pennsylvania, a quintessential rust belt city with a population of roughly 300,000 residents, Pittsburgh is the second-largest city in the state.[1] Pittsburgh, and the surrounding region, is far more topographically diverse than Tigard. However, many neighborhoods and areas in the city face issues with connectivity much like the industrial and employment lands in Tigard. While Pittsburgh is on the surface not directly comparable to Tigard, as Pittsburgh is not a suburb and has more than five times the population, a recent rezoning effort along the city's three riverfronts provides key insights for how to promote more sustainable and equitable development in areas to match a community's priorities.

Much of Pittsburgh's history can be told through the city's relationship to its rivers as it evolved from a major manufacturing center to an emerging technology and medical hub, becoming one of the most liveable cities in the US. For much of its history, the city's economy has been incredibly dependent on manufacturing and heavy industry. Locations along the riverfront were coveted by industrial users and manufacturers for their cheap means of transportation. However by the 1980s, the steel industry in Pittsburgh nearly completely collapsed and the city suffered several decades of population decline.[2] Today, Pittsburgh is one of the most prominent examples of how deindustrialized cities can transform themselves and embrace emerging industries. Pittsburgh's modern economy is rooted in higher education, professional services, and healthcare thanks in part to being home to the University of Pittsburgh Medical

Figure 35. Pittsburgh Downtown

Downtown Pittsburgh as seen from Mount Washington featuring the city's three rivers: The Ohio, Allegheny, and Monongahela.

Image Source: Mac Cunningham

Center, Carnegie Mellon University, and the University of Pittsburgh. Much of Pittsburgh's emerging tech scene can be seen along the riverfront through large research and development facilities. Residents show a greater desire to access the riverfront and increased development of mixed use and residential projects sprouted along these waterways. Additionally, the city has been eager for more infill development to meet its sustainability goals. In 2017, former-President Trump thrust Pittsburgh into the national spotlight after he withdrew from the Paris Climate Accord, claiming that he was elected to represent the citizens of Pittsburgh, not Paris. In response, Pittsburgh Mayor Bill Peduto committed the city to meeting the goals of the Paris Climate Accord and has advocated for more sustainability efforts in the city.[3]

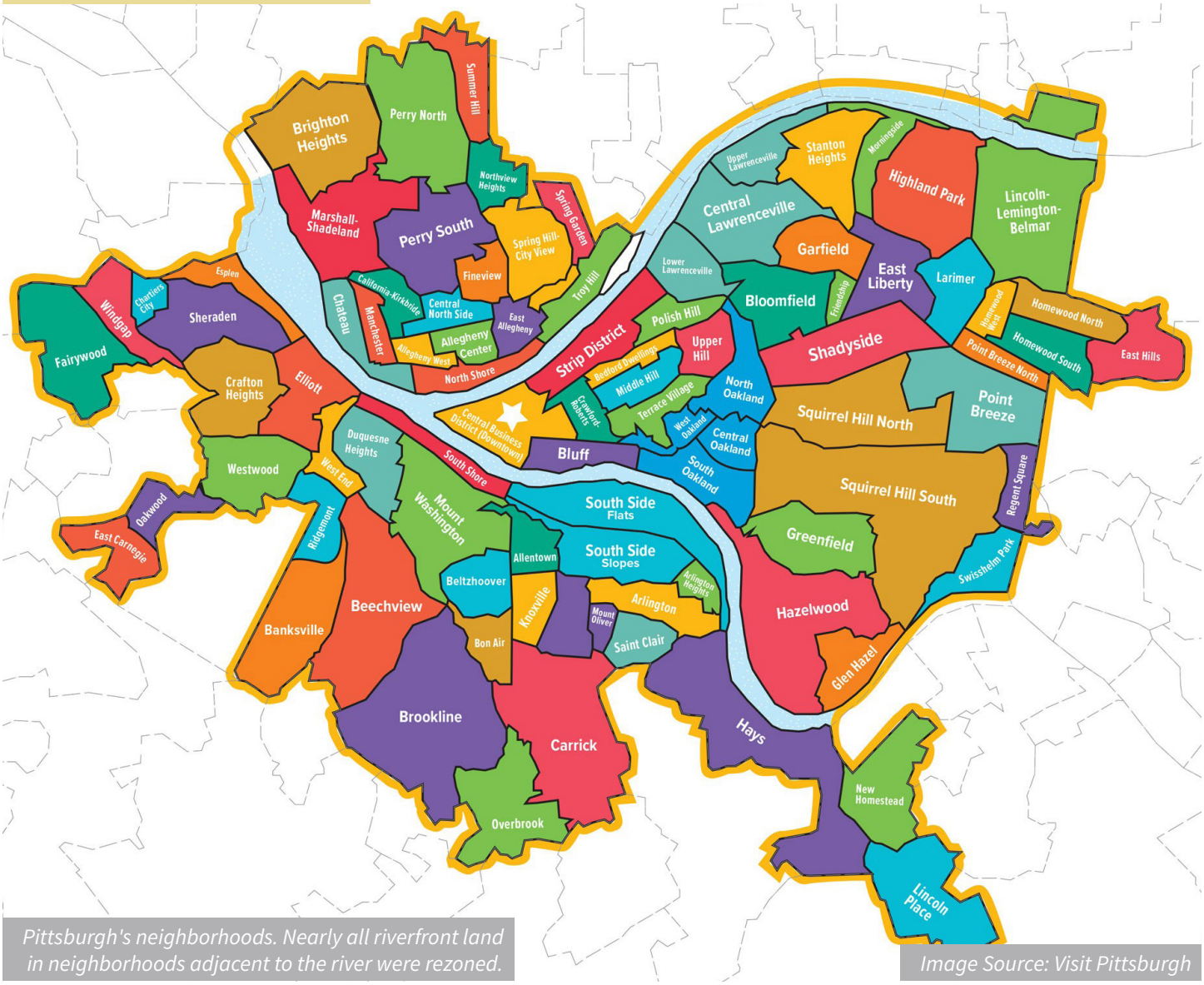
Core Employment Land Issue

According to local planners, zoning along the riverfront was not serving the city's goals for sustainability, as developers relied on extensive variances with limited opportunities for public engagement, ultimately catalyzing Pittsburgh's Riverfront District rezoning.[4] Deindustrialization left Pittsburgh with a considerable number of large vacant or abandoned parcels adjacent to the riverfront which, by the late 2000s and through the 2010s, were ripe for redevelopment. Most of the parcels along the riverfront were zoned urban industrial which encouraged adaptive reuse but many of these parcels were difficult to redevelop as they were either former brownfields or lacked basic infrastructure.[5]

Due to the urban industrial zoning along the riverfront, many areas that were most desirable for redevelopment, particularly in the Strip District and Lawrenceville neighborhoods, were not zoned multi-family and thus required a large number of zoning variances for projects to move forward while other projects needed to adopt specially planned districts for their developments. Both of these zoning processes had limited opportunities for community engagement. Engagement was often limited to projects applying for zoning variances, and the thresholds for a project to go to Planning Commission were high and sometimes unclear. This was of particular concern since existing neighborhood residents expressed concerns about these developments, though most were primarily related to parking and building height. Incorporating more opportunities for public engagement in major redevelopments became a critical goal for Pittsburgh via their rezoning. Additionally, Pittsburgh wanted to adopt a zoning code that was more straightforward for developers to understand without having to apply for a large number of zoning variances for each project. Planners were concerned that this was becoming the norm for doing development along the Riverfront. Lastly, another major issue that kicked off the Riverfront rezoning was encroachment on long-time industrial users. As mixed-use and high-density residential uses began to develop along the riverfront, industrial users feared increases in land prices and faced complaints from nearby residents regarding the noise and unsightliness of industrial sites.6

Collectively, the above issues and input from planning staff, developers, and residents led the City to determine the zoning code was not doing a good job for existing industrial users, future developers, and nearby residents. Additionally, the zoning code was not facilitating the kind of projects that the City of Pittsburgh wanted to see nor taking into consideration the sites' proximity to the rivers which were being increasingly viewed as natural public amenities.

Figure 36. Pittsburgh Neighborhoods



Pittsburgh's neighborhoods. Nearly all riverfront land in neighborhoods adjacent to the river were rezoned.

Image Source: Visit Pittsburgh

Tactic to Resolve Employment Land Issue

To ensure that parcels along the Riverfront were zoned appropriately and met the goals of a more streamlined code for developers, greater opportunities for public engagement, promoting sustainability, and preventing encroachment on longtime industrial users, Pittsburgh underwent a two-year public engagement process to formulate a new zoning code for the riverfronts.[7] However, recognizing that development would continue along the riverfront during this engagement process, the city adopted a temporary overlay along the riverfront in 2016. The temporary overlay provided "additional standards for some demolition, new or expanded development, and new or expanded surface parking with objectives of ensuring riverfront access, improving public safety, providing for public and design review processes, understanding transportation networks impacts, reconnecting neighborhoods with their riverfronts, and

improving riverfront ecology and environmental health."[8] Throughout the interim overlay development period, Pittsburgh recognized the range of uses along the city's riverfront and determined a one-size-fits-all solution would not work. Through extensive community engagement, the city discovered that major concerns included building height, Floor-Area-Ratio trade-offs, and protecting views.[9]

In 2018, the Pittsburgh City Council approved a 200-page rewrite of the city's code creating the Riverfront Zoning District.[10] The rezoning dramatically reduced the number of zoning classifications along the Riverfront from twenty-eight zones to five zones.[11] The resulting Riverfront Improvement District did not change the zoning for downtown Pittsburgh and Specially Planned Districts and includes three base zones: residential, commercial, and industrial.

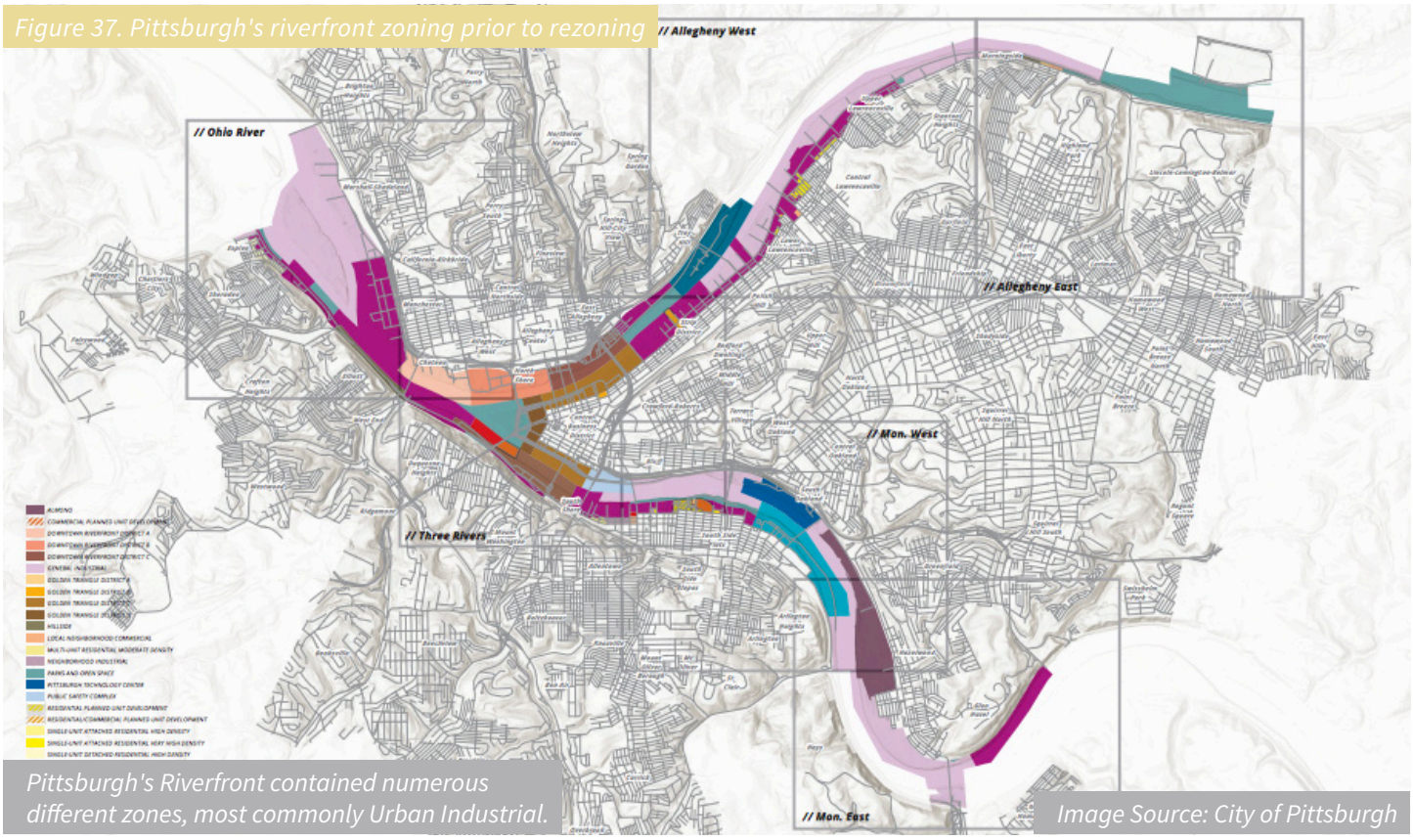
Areas zoned for residential development allow all residential housing types with the exception of single-family detached housing. While not explicitly framed as a means of promoting sustainability and equity, the decision to forbid single-family detached housing promotes both. The City of Pittsburgh viewed many of the sites along the Riverfront as prime opportunities for urban infill and wanted to ensure that the sites were developed efficiently.[12] By promoting greater density, Pittsburgh also created more opportunities to build for housing types that are more likely to be affordable to middle and lower income families.

The commercial zones are all mixed use with two subdistricts. One subdistrict is for the North Shore area of the city which was specially crafted due to the area's unique cultural amenities. The main mixed-use subdistrict for all other commercial zones allows for both vertical and horizontal mixed uses.[13]

The industrial zones comprise two subdistricts: General Industrial and Industrial Mixed-Use. General Industrial allows exclusively industrial uses. Industrial Mixed-Use "provides for areas where uses are diversifying from their original strictly industrial nature. It includes provisions that facilitate the re-use of structures built for industrial work that can be or already have been converted to non-industrial uses compatible with the remaining industrial uses including higher density residential development."[14] The Industrial Mixed-Use zone is already intended to include research, development, and tech-oriented industry areas which are currently occupied by Uber and Carnegie Mellon. Critically, the city also decided to exempt equipment associated with basic industry assembly and manufacturing from review by the city's Planning Commission.

The decision to preserve areas for exclusive industrial use was seen as a critical element of the riverfront rezoning and this decision was made with equity in mind. The city recognized that the jobs located in general industrial paid higher wages than in the mixed use areas and many of the companies located on industrial sites are legacy companies with a long history of operating in the city.[15]

Figure 37. Pittsburgh's riverfront zoning prior to rezoning



Pittsburgh's Riverfront contained numerous different zones, most commonly Urban Industrial.

Image Source: City of Pittsburgh

Another major component of Pittsburgh's Riverfront Zoning District was the inclusion of a performance points system.

The performance points system allows for additional height and reduced riparian barrier, and performance points are an innovative way for the city to achieve outcomes in their built environment that they could not otherwise legally require in their zoning code.[16] Provisions in the performance points system include points for onsite energy consumption (for new construction and existing structures) and generation, affordable housing, rainwater collection, building reuse and riverfront public access easements, trails, and amenities, neighborhood ecology, public art, retaining the urban fabric, and transit-oriented development.[17] Pittsburgh's performance points system is a major way for the city to promote sustainability and equity.

Lastly, communities now also have more chances to engage the city in the design review process for developments in their communities, a change from the previous system in which developers would obtain variances from the Planning Commissions but without public input.[18] Now, any developments in the Riverfront Zoning District above 15,000 square feet must go before the city's Planning Commission for public feedback. [19]

Takeaways and Lessons Learned

Track your data, but only if you know why you want to track it. Pittsburgh's Riverfront District rezoning is still very new and we are unable to make a firm conclusion on how effective it has been. However, the lack of time for the market to respond is not the only reason why we are unable to do so. Since being implemented in 2018, Pittsburgh has yet to do a formal audit of how effective their rezoning has been. Part of this is because planners have not set up a data collection system to collect this information. A lesson learned by the city was that they should have set up a more formal tracking system from the onset. Anecdotally, however, developers appear to be utilizing some performance point standards from the stormwater management section, transit-oriented development, and public art. Planners have been disappointed to see that the energy efficiency generation and consumption incentives have not been as widely used as they would have liked.[20]

Not everyone is going to be happy with the results.

Despite the extensive amount of public engagement, some developers are not pleased with the rezoning. The initial vote by Pittsburgh's City Council was delayed for a few weeks after concerns by some developers for sites on the North Shore that their developments would not comply with the new zoning code. Other developers remain concerned about the height and parking restrictions.[21]

Carefully review your incentive structure.

Some of Pittsburgh's zoning incentive structure contains some loopholes that have been easily utilized or could be exploited by developers. Many developers have been able to automatically qualify for stormwater mitigation points and Pittsburgh was not as specific as would have been optimal in their incentive structure regarding solar panels over parking spaces for a height bonus.[23]

Hire a consultant to create visual representations of your desired zoning outcomes.

Zoning codes are incredibly technical documents that are not always clear to even experienced developers. Working with a consultant that is adept in communicating complex zoning ideas coherently in visuals can help clarify for developers what is explicitly allowed by the zoning code and the types of development a city wants to see in their zones.[22]

Create buffer zones surrounding heavy industrial users.

One of the biggest concerns of industrial users in Pittsburgh was encroachment of higher price per square footage uses like residential and commercial/retail. In order to help alleviate this concern, Pittsburgh creates exclusive industrial zones and ringed many of these areas with a transitional urban industrial zoning that allows light industrial uses like research and development to mix with commercial uses.[24]

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Section 4

POLICY RECOMMENDATIONS

Image Sources: Paul Runge

ATTUNE PLANNING

Policy Recommendation Summary

The Policy Recommendations listed in this section were selected for their impact on advancing equity and sustainability. Recommendations were considered for their applicability to Tigard and relevance from the Precedents covered in the previous section. Moreover, the Policy Recommendations were chosen because evidence and research demonstrated their ability to advance equity and sustainability, not just that another city adopted that policy. As such, each recommendation includes applicable justification for why that recommendation was included.

This is not an exhaustive list of recommendations that would advance equity and sustainability in zoning. These simply represent what rose to the top during our interview and research process in the limited timeframe. The fifth group of policy recommendations below lists additional policies we believe could also advance equity and sustainability, but time constraints prevented a complete analysis to validate them.

Many policy recommendations include an accompanying benchmark. These benchmarks will help Tigard gauge whether the policy is working to achieve the desired outcome. Calculating and tracking these benchmarks will help Tigard assess the need for further refinement of policies or potentially the need to pursue a new strategy to achieve a sustainability or equity goal. The benchmarks represent a best practice learned from the Precedents: data collection can help planners understand what is working or not in their zoning code and iterate under a principle of continuous improvement.

Group 1 – Uses

1.1 - Keep an exclusive Industrial-Use Zone

Industrial jobs are more likely to be held by workers of color. Yet encroachment into this zone by quasi-industrial uses threatens the ability of industrial businesses to affordably locate in Tigard. As such, Tigard should protect these jobs through a stricter exclusive-industrial zone.

1.1.1 - Apply the exclusive zone where industrial users already exist to mitigate displacement pressure

1.1.2 - Allow small amounts of retail and office as secondary uses

1.2 - Maintain an Industrial Mixed-Use zone

Tigard already has a zone, designated I-P, for industrial mixed use. This zone is important to offering the right conditions for the quasi-industrial and other uses such as office in these employment zones without encroaching on industrial-exclusive lands. Many growing industry sectors in Tigard would fit well in this zone while creating physical protections for residents from the negative impacts of industrial.

1.2.1 - Use the Industrial Mixed-Use Zone to buffer exclusive industrial areas from residential zones and traditional commercial/mixed-use zones

1.2.2 - Allow residential in industrial lands by restrictive use

1.3 - When prohibiting uses, analyze for equity and sustainability

Tigard will have to decide further what uses to prohibit in each zone. We recommend that Tigard conduct an equity and sustainability analysis for each use before prohibiting it. For example, Tigard should conduct a demographic analysis of workers in an industry before prohibiting that industry to ensure no disproportionate impacts on workers of color.

Group 2 – Development Standards

2.1 - Increase flexibility for smaller spaces in employment zones

Flexible zoning for smaller spaces is useful for offering the right conditions for small businesses. Additionally, Flex Space, an industrial real estate product, should also be allowed and encouraged for its affordability and role in supporting small businesses as they grow from the garage to sited business.

2.1.1 - Maintain or decrease minimum lot requirements, setbacks, and height limits

2.1.2 - Allow flexibility in design standards for industrial users

2.2 - Eliminate minimum parking requirements

Requiring a minimum amount of parking subsidizes automobile commuting, increasing carbon emissions. It also forces individuals without car access to de facto pay for parking as the cost of building and maintaining required parking is incorporated into stores' prices. Further, these costs are absorbed by individual businesses, adding costs to small businesses, which women and people of color are more like to own and operate.

2.2.1 - Maintain allowances for shared parking agreements

2.3 - Adopt better green building standards

Green buildings reduce their environmental impact both during construction and operation. Tigard should adopt stricter standards and require green-building-related data reporting in order to inform future climate plans.

2.3.1 - Establish a minimum energy efficiency standard of LEED-Silver or similar, and create a financial mechanism to hold developers accountable

2.3.2 - Require owners of non-residential buildings over 50,000 square feet to report their utility and waste data to Energy Star Portfolio Manager in an effort to meet performance targets by actively improving their buildings over time

2.3.3 - Require ecoroofs, whether cool roof or green roof, on at least 15% of roof surface of new buildings over 10,000 square feet

2.3.4 - The City of Tigard should establish Night Sky Requirements by adopting an outdoor lighting ordinance or code

Group 3 – Development Incentives

3.1 - Craft an incentive structure for your zoning code

An incentive structure is an effective way to ensure that developers incorporate elements into their projects that help meet community goals and priorities around equity and sustainability. In some cases, due to limitations in state enabling legislation, jurisdictions cannot legally mandate such elements. Other times, outright requirements to include such elements could have negative secondary impacts, making incentives a more appealing solution. Incentive-based zoning was featured prominently throughout the precedents as an effective way to build useful public amenities.

3.1.1 - Use Floor Area Ratio (FAR) as the primary bonus to developers for offering public amenities

3.1.2 - Process for crafting an incentive structure

3.1.3 - Offer a menu of incentive options to developers

3.2 - Sample of options that can be included in an incentive structure

In this section, we offer the beginnings of a menu of incentives Tigard should offer that will advance equity and sustainability. Chapter 5 includes some additional incentives that could also be included pending further research.

3.2.1 - Encourage new and redevelopment to adopt energy efficient construction techniques

3.2.2 - Incentivize property owners to offer short term leases in exchange for building improvement grants

3.2.3 - Incentivize shared parking agreement participation

3.2.4 - Enhance pedestrian/bicycle connectivity of employment lands

Group 4 – Process

4.1 - Equitable public engagement around new developments

Protecting community control is critical to equity, particularly when the development will increase pollution or have an otherwise large impact on an area. However, many structures for facilitating public involvement disproportionately lift up the voices of those that hold power in our society. Public involvement must provide an opportunity for self-determination and be accessible to everyone in the community.

4.1.1 - Conduct a review of participation in Type II and Type III processes for disparities among racial, gender, and other identity groups

4.1.2 - Update the base zone and development standard code to clarify required public involvement and hearing processes

4.2 - Conduct a public involvement process to define equity & sustainability for Tigard

While this report established working definitions for equity and sustainability, ultimately Tigard residents and workers must develop these definitions, goals, and desired outcomes for itself. During the remainder of the MADE process, which includes opportunities for public participation, Tigard should include a space for the community to define equity and sustainability, and clearly articulate its goals around creating an equitable and sustainable city.

Group 5 – Miscellaneous and Under-Explored

The recommendations in this chapter were not able to be fully explored and researched in the limited timeframe. However, preliminary evidence suggests that they could advance equity and sustainability and should be considered for inclusion in MADE pending further research.

1.1 Keep an Exclusive Industrial-Use Zone

Recommendation

As part of the Tigard MADE rezoning, Tigard should retain an exclusive industrial-use zone. This zone would allow Tigard's current suite of allowed industrial uses by right except heavy industrial, which could be made conditional to give the community an opportunity for input (in line with Recommendation 4.2). Industry represents a well-paying career pathway that disproportionately employs the Portland metropolitan region's communities of color and immigrant communities. Exclusive industrial zones protect industry from displacement and thereby protect workers.

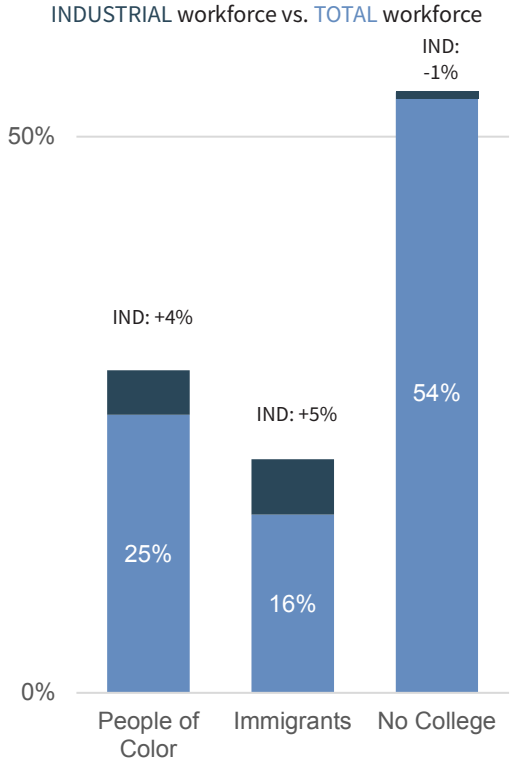
Justification

Why maintain an exclusive industrial zone?

Industry offers important career opportunities for workers from historically marginalized or otherwise disadvantaged groups. People of color, immigrants, and workers without college degrees disproportionately work in the industrial sector, earning more than they would in comparably accessible alternatives, such as the retail sector.[1] This is generally true in the Portland Region, too, where disproportionately more people of color and immigrants work in the industrial sector.[2]

Thus, retaining industry is an equity issue. Such protections are even more critical because industry is no longer disappearing in the Portland region. In fact, de-industrialization slowed to a stop in the Portland-region during the 2010s.[3] Zoning that assumes continued de-industrial-

Figure 38. Demographic differences between the Portland-region's industrial and total workforce



Data Source: US Census PUMS (2014-18)

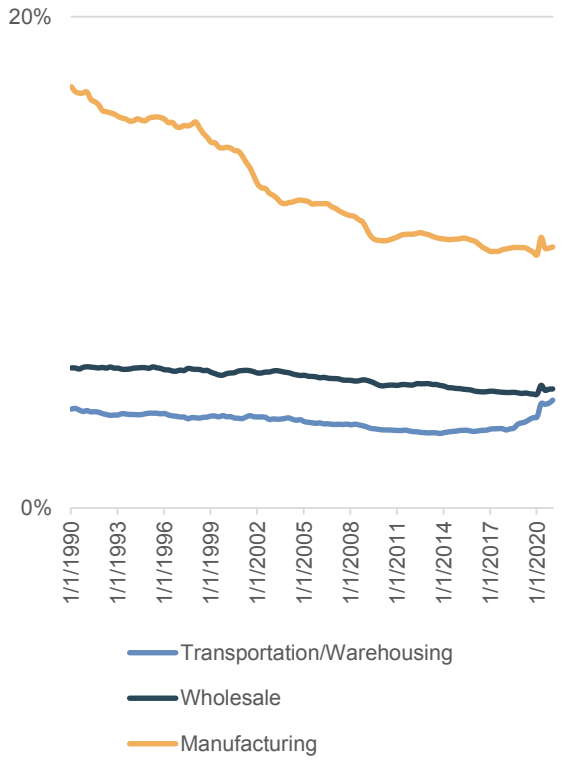
ization risks inadequately protecting remaining industry from redevelopment pressure. Dr. Jamaal Green, Research Analyst at Oregon Dept. of Human Services, writes, the "issue here is not a blind faith in the return of manufacturing to cities, but in not foreclosing legitimate economic and community development opportunities for the sake of converting land for its 'highest and best use.' Conflicts over industrial land use within our cities are greater conflicts over what kind of economies we want present in our cities and who is able to take advantage of given opportunities."[4] To that end, an important caveat is that 70% of industrial and wholesale workers in the Portland Region are male, whereas males only represent 49% of the overall workforce.[5] To push for the most equitable version of an industrial sector and its lands, Recommendation 2.1.1 suggests altering development standards to better support the creation of small lots. Small parcels and small spaces are particularly conducive to female entrepreneurs, because nearly all women-owned businesses are classified by the US Small Business Administration as small, with 500 employees or fewer.[6]

Do exclusive industrial zones work?

With enforcement, yes. In Portland's case, Senior Planner Troy Doss attested to the effectiveness of the city's use allowances at keeping traditional office users from encroaching on the Central Eastside Industrial District.[7] Likewise, Pittsburgh's Riverfront Development Coordinator Andrea Lavin Kossis cited the city's exclusive riverfront-industrial zone as among the most important protections offered to industrial areas.[8]

Portland's EX-zoned Pearl District and EX-zoned corridors on the Central Eastside serve as clear examples of the redevelopment that can occur once exclusive industrial zoning is lifted.

Figure 39. Percent of Portland-region's total non-farm employment by industrial subsector



Data Source: Federal Reserve Bank of St. Louis

Portland's EX zones classify industrial businesses as conforming uses, but allow office, residential, and retail as well. In both the Pearl and the EX-zoned corridors in the Central Eastside, industrial spaces have been torn down or converted to other uses. This is because allowing higher-rent uses in formerly industrial-only areas raises the potential rental revenue of each parcel if it were to be redeveloped. Higher rent potential generally translates to higher land values, offering attractive potential windfalls for current owners. The prospect of such windfalls leads to sales and conversion away from industrial uses. However, prohibiting higher-rent uses stops such conversions, mitigating a key displacement pressure facing industrial users.

Figure 40 is a simple residual land value analysis. It illustrates—with hypothetical numbers and building plans—how the higher rents that come from office and residential uses often outweigh the higher construction costs that accompany those uses. This yields a more profitable development opportunity than could be realized via industrial development. With greater profit potential on the table, the developer is willing to spend more money for the land. This is the residual land value: the amount the developer has after construction costs to pay for the land and still make a profit. Over time, property owners will gladly sell to developers of higher rent uses rather than to industrial developers in order to pocket that residual as a windfall. This is how allowing non-industrial uses in well located, non-contaminated industrial areas can lead to conversion.

Note: This is a basic illustration of the financial calculations that lead developers to pay more for land where higher-rent uses like residential and office are allowed. The numbers are hypothetical. The analysis solely demo strates the underlying financial principles that lead to land increasing in value once higher rent uses are permited.

Table 11. Example of a basic residual land value analysis for a single-property with three different potential uses

	Industrial	Office	Residential	Calculation Notes
Building Program				
Stories	1	2	2	
Gross sf	100,000	172,500	172,500	
Net sf	100,000	150,000	150,000	Gross sf = net sf for industrial, due to lack of hallways, stairwells
Development Cost				
Hard costs per sf	$120	$285	$285	Assumptions (likely quite low)
Total hard costs	$12,000,000	$49,162,500	$49,162,500	Net sf * Hard costs per sf
Total soft costs	$2,400,000	$9,832,500	$9,832,500	Assume soft costs = 20% of hard costs
Total costs (without land)	$14,400,000	$58,995,000	$58,995,000	Hard costs + soft costs
Income				
Annual rent per sf	$12	$29	$27	Assumptions based on market research
Annual gross income	$1,200,000	$4,350,000	$4,050,000	Annual rent per sf * Net sf
Vacancy/collection loss	$60,000	$217,500	$202,500	Vacancy and collection loss assumed = 5% of annual gross income
Net operating income	$1,140,000	$4,132,500	$3,847,500	Annual gross income - vacancy and collection loss
Cap rate	6.5%	5.5%	4.5%	Assumptions based on market research
Spread	1.0%	1.0%	1.0%	Amount the cap rate goes down during the development process
Going-in cap rate	7.5%	6.5%	5.5%	Cap rate + spread
Supportable cost	$15,200,000	$63,576,923	$69,954,545	Net operating income/Going-in cap rate
Residual land value	**$800,000**	**$4,581,923**	**$10,959,545**	Supportable cost - total costs (without land)

Source: Author calculations

Benchmarks

Tigard should measure the success of its exclusive industrial zones by tracking the following metrics:

- Percentage of square footage in the exclusive industrial zone leased by non-industrial users. Increases in this percentage indicate that other uses are encroaching on industrial spaces, potentially creating upward pressure on rents.
- Ratio of the rental growth rate in Tigard's exclusive industrial zone to the rental growth rate for Portland-region industrial properties. If this ratio is greater than 1.0, it means Tigard's exclusive industrial areas' rents are growing more rapidly than other industrial areas. Such rental growth might be an acceptable outcome (justified, for example, by the mix of property subtypes in Tigard). But the benchmark still provides a quick way to monitor for disproportionate increases in the cost of renting industrial land in Tigard.

1.1.1 Apply the Exclusive Industrial Zone to Parcels with Existing Users

Recommendation

Tigard should apply the exclusive industrial zone to parcels where industrial users already exist and have invested money. Tigard should consider applying industrial use zoning to a non-industrial parcel only if a highly compelling reason exists supporting such a decision.

Justification

As explored in Recommendation 1.1 and Table 11, zoning can protect existing industrial users from displacement pressure, but it cannot necessarily attract new industrial users that are seeking desirable locations, pricing, and attributes, not just appropriate zoning. Thus, an exclusive industrial zone is best applied to parcels with an existing light or heavy industrial use. In particular, Tigard should protect users with large on-site sunk costs—an idea from a consultant who has conducted rezonings around the country and met with industrial users during Pittsburgh's riverfront rezoning.[9] Examples of large sunk costs include specialized tenant improvements, building spaces, and difficult-to-move equipment. An exclusive industrial zone may also be appropriate on sites with attributes that create a compelling case for industrial use, such as large flat greenfields acquired through UGB expansion, sites with enhanced railroad, electrical power access, existing brownfields, especially if they are buffered from residential areas (see Recommendation 1.2.1).

Parcels with existing industrial users and a compelling constellation of attributes that favor industrial use likely differ from many parcels found within Tigard's I-P zone, which accommodates a mix of office, industrial, and flex real-estate products. As a general rule, Tigard should not render current I-P zone users non-conforming by applying a stricter exclusive industrial zone, unless a truly compelling reason for rezoning to exclusive industrial use exists, as described above. As explored further in Recommendation 1.3, Tigard should prioritize the known impact of rendering a user non-conforming—increased likelihood of displacement—over the less-certain potential for a new, hypothetically more ideal user.

1.1.2 Allow Small Amounts of Retail and Office as Secondary Uses

Recommendation

The City of Tigard should adopt a 12.5% of net floor area allowance for retail and office within exclusive industrial zones, as Portland does. Similarly, Tigard should continue to allow small caretaker residences (e.g. less than 1,200 square feet) in its exclusive industrial zone, however these caretaker units need not be required to be detached, as current zoning code requires. These small allowances will facilitate operations for industrial users that want to host a small amount of retail, office, or caretaker residential on site. By only offering percentage-based rather than absolute square-footage allowances, the code prevents any large industrial sites from being partitioned and converted to retail or office as the primary use, fitting with our overall recommendation of preserving exclusive industrial areas.

This should only serve as an interim solution. Both Portland and Pittsburgh established their retail and office allowances by having conversations with existing industrial users to better understand their needs. The City of Tigard should do the same to tailor its non-industrial use allowances to bring the size of the allowances in line with the needs of actual local users.

Justification

Some industrial users have offices or retail spaces on site to support their operations or customer-facing interactions. A wholesale prohibition on such uses within an exclusive industrial area, which appears to be the status quo in Tigard's I-L and I-H zones, could impede the operations of existing and new industrial users, depending on the strictness of the implementation. Precedents from Pittsburgh and Portland offer an alternative approach: a small allowance for office and retail uses in exclusive industrial zones.[10,11] In particular, Portland's solution allowing for a percentage of net floor area allowance is an approach that's responsive to both large and small sites and buildings, in line with our recommendations to support the creation of small, flexible employment spaces. These precedents help justify such an allowance in Tigard, which aims to maximize the by-right usefulness of those sites without allowing full conversion to non-industrial uses.

Table 12. Allowed Uses For Precedents' Industrial Zones

	Portland (IG1 + EOS)	Pittsburgh (RIV-GI)	Tigard (I-L)	Tigard (I-H)
Light Industrial				
Heavy Industrial (e.g. waste-related, nuisances like noise, glare)				
Office	Sites <40k sf: 5k sf allowed Sites >40k sf: 12.5% net floor area allowed	10,000 sf allowed		
Creative Office (e.g. software, design)	Allowed, plus bonus 1.0 FAR for 1st-floor industrial	10,000 sf allowed	R&D allowed	R&D allowed
Retail	Sites <40k sf: 5k sf allowed Sites >40k sf: 12.5% net floor area allowed			
Residential			Caretaker allowed	Caretaker allowed

Allowed Limited Prohibited

Sources: Portland, Pittsburgh, and Tigard municipal code

1.2 Maintain an Industrial Mixed-Use Zone

Recommendation

The City of Tigard should adopt a mixed-use industrial zone that allows light industrial as well as varieties of office—traditional, industrial, and creative office—by right.

Justification

Tigard should retain an industrial mixed-use zone, currently I-P, to allow for a buffer between heavy industrial and other users. This zone also presents an opportunity to better locate light industry and enable Tigard to become the home of more creative, technology-oriented users as the economy transitions. This mixed-use zone also presents an opportunity to mix industrial users which are compatible with residential uses in a controlled manner.

Accommodate a changing economy

Throughout the modern area, industrial production and manufacturing has changed over time. From larger multi-floor warehouses in urban areas to large, boxy developments in more suburban and outlying communities. Additionally, the definition of manufacturing has expanded over time away from solely mechanical parts for other commodities to include software manufacturing and research and development activity.

Much like Tigard, Portland's Central Eastside faced encroachment pressures from developers due to the area's prime location in the central city. To placate some of developers' demands for the areas but without increasing the number of visitors to new office developments in the area, Portland added creative uses to be allowable by-right in the the existing IG1 base zone for the Central Eastside. This allowed software development, data processing, web design, and other related industries without frequent customers or client visits to be located in the area.[12] In Portland, the inclusion of more creative industries has allowed for higher density employment in the Central Eastside, however during this time some longtime industrial users have moved from the area in search of other locations.[13] In Tigard's case, an exclusive industrial zone applied where longtime industrial tenants already exist would protect against the displacement described above. At the same time, a mixed-use industrial zone applied as a buffer around those industrial areas would still allow Tigard to facilitate the inflow of new light industrial, technology, and creative users.

One important thing to note from allowing creative and technology uses in industrial mixed use areas is that this zoning change alone will not cultivate a new creative and technological hub in Tigard overnight. However, as the future of the economy transitions more to creative industries and research and development, allowing these

uses in industrial areas, especially an industrial mixed-use zone (currently I-P), better position Tigard to be ready to be the home of more of these industries. Indeed, Tigard already shows an agglomeration of Professional, Scientific, and Technical Services as well as Information services in its economy.[14] These services would be prime users of mixed-use industrial developments.

Apply buffer zones

In Pittsburgh, they recognized the importance of exclusive industrial zones but also recognized that creating a buffer around large sites, heavy industrial users would be valuable to protect against encroachment and also any complaints about nuisances that residents living near heavy industrial sites may have.[15] These buffer zones, zoned as Industrial Mixed Use, allow for less intensive industrial uses such as activities related to research and development and technology-oriented with other commercial/retail and high-density residential uses. Pittsburgh's Riverfront Zoning district has not yet been in place long enough to determine if this zoning has been entirely successful, but these buffer zones seem promising in principle.

Accommodate residential demand while still blocking it in the wrong areas

Adding residential uses to employment lands creates an incentive for greater residential usage, as revenues generated by residential properties tends to be higher than commercial, retail, and industrial uses. Portland's Central Eastside experienced extreme pressure to allow for more residential development. To temper this demand, the Central Eastside allowed for some residential uses primarily along transit corridors through the district.[16] This zoning change has resulted in a number of new residential developments in recent years. In Pittsburgh, there has been considerable demand for high-density residential development along the riverfront district, so residential development is allowed in the Mixed Residential Subdistrict, the Mixed Use commercial zones, and industrial mixed-use zones, too.[17] The principle demonstrated by these precedents—allowing residential uses in select, appropriate employment areas—could apply well in Tigard, pending restrictions discussed in depth in Recommendation 1.2.2.

Benchmarks

To ensure that the industrial mixed-use zones are effective, Tigard should track the following metrics:

- Track the number of active number of creative and technology-oriented users in industrial zones. Use a ratio of creative and technology-oriented uses compared to more traditional industrial uses (i.e. manufacturing) to determine the growth of creative and technology-oriented users to evaluate if these uses should be changed from by-right to conditional use in order to better protect industrial users.
- Develop a metric (i.e. 15%) of employment lands that can support residential as a mixed, secondary use to ensure that employment lands are reserved primarily for commercial and industrial users. Once this percentage has been reach, place a moratorium on residential development in restricted use zones and re-evaluate if more residential development should be permitted and tighten the guidance of where residential development can occur.

1.2.1 Use the IMU to Buffer Exclusive Industrial Areas from Residential Zones and Traditional Commercial/ Mixed-Use Zones

Recommendation

A buffer mixed-use industrial zoning district in Tigard would be most useful along areas immediately west of the Portland and Western Railroad and WES commuter rail tracks, that do not already have screening or natural buffers and which are immediately adjacent to residential communities. Particularly parcels on SW 74th Avenue and SW Bonita Road as well as SW Hall Boulevard and SW Durham Road. These buffer zones will provide a barrier between residents and industrial uses. This will be more likely to benefit low-income residents, who historically tend to be those located in housing closest to industrial users. Additionally, industrial mixed-use zones should surround all areas of exclusive industrial use to provide a barrier between heavy industry and more traditional commercial and mixed-use zones.

Justification

- Heavy industrial users would have a buffer from other users who would complain about nuisances associated with industrial sites with mixed-use industrial zones.
- Greater air quality for low income residents located near current industrial zones

1.2.2 Allow Residential in Exclusive and Mixed-Use Industrial Zones by Restrictive Use

Recommendation

Tigard should allow residential in exclusive industrial and industrial mixed use zones by restrictive use with the following guidance:

- The exclusive industrial use zone may have one on-site attached or detached caretaker unit as a secondary use capped at 1,200 square feet
- Dense, multi-family residential allowed in mixed-use developments on parcels within a ½ mile walkshed of a future Southwest Corridor Light Rail

Justification

Allowing only one residential caretaker unit within exclusive industrial zones will allow industrial users who want someone on site of their properties at all times the right to do so without fear of increased land values from the allowance of residential development. However, the residential unit should be a secondary use of the site and the caretaker unit should be capped at 1,200 square feet. This size cap should be incorporated to ensure that the residential unit is not excessively large but could still support the caretaker's family living in the unit if necessary.

Making residential development a restricted, secondary use in industrial mixed-use zones allows for City of Tigard planners to control where residential development occurs and prevent residential encroachment on other mixed-use industrial parcels. Also restricting where residential developments can occur in industrial zones will benefit nearby exclusive industrial users as those living in residential units nearby are likely to complain about nuisances associated with heavy industry such as loud noises and views of heavy machinery. Lastly, enabling the development of denser residential units near future Southwest Corridor Light Rail stops will serve the region's sustainability goals and placate developers who want to build residential units in mixed-use districts. Restricting residential in industrial mixed-use zones to those walkshed areas will ensure that the industrial mixed-use zone serves its primary purpose as an employment zone.

1.3 When Prohibiting Uses, Analyze for Equity and Sustainability

Recommendation

- The City of Tigard should use equity and sustainability criteria to help assess whether or not to prohibit a use. For example, Tigard staff could use American Community Survey Public Use Microdata to understand the demographics of individuals that work at the types of businesses Tigard wishes to prohibit.
- The City of Tigard should be cautious about prohibiting specific uses. Zoning sets boundaries, but does not guarantee a particular outcome within the realm of what's allowed.

Justification

Why does Tigard need to analyze the uses it seeks to prohibit?

Use requirements are powerful. Rendering a specific use non-conforming raises the likelihood of such a business's obsolescence and displacement. In Tigard, nonconforming uses may not be "enlarged, increased, or extended" nor can they add new buildings, signs, or structures, locking them out of improvements, additions, or replacements. If a nonconforming use "is discontinued or abandoned for any reason for a period of six months, any subsequent use of land must conform to the regulations specified by this title… A use is discontinued or abandoned… on the date of termination of any lease or contract under which the nonconforming use has occupied the land."[18]

At first glance, that may seem acceptable; the city is merely planning for the types of employment it favors and labeling prohibited uses non-conforming. However, equity and sustainability concerns arise when one asks: what are the impacts of certain businesses being pushed out? Displaced businesses result in displaced workers. When the City of Tigard determines it does not wish to have a particular type of use, it raises the possibility that it is disproportionately barring specific workers with specific types of backgrounds from employment in the city.

To extend this line of thinking further, imagine the City of Tigard wished to prohibit landscaping businesses from certain zones, perhaps due to low employment density or because employees conduct their work regionally, reducing the local economic multiplier effect of the business in Tigard. Examining ACS PUMS data reveals that 45% of the region's landscaping employees are Hispanic/Latino, more than four times the proportion of Hispanic/Latino workers seen across all industries for the region.[19] This is a red flag.

The City of Tigard should analyze potential use prohibitions with such equity and sustainability criteria in mind to help determine whether it can justify its decisions. As a start, we recommend that Tigard consider:

- The demographics of the workers the use prohibition is displacing.
- The availability of affordable alternative spaces in Tigard for any displaced uses.
- The likelihood that the use, if displaced, will locate in a jurisdiction with less oversight regarding its environmental impact.
- The likelihood that the use, if displaced, will locate in a less central location, potentially raising vehicle miles traveled.

Is displacement okay if a "better" use is coming to replace it?

In short: no, not exactly, in large part because zoning doesn't guarantee the "better" will come.

The immediate impacts of labeling a use as non-conforming is an increased likelihood that businesses within that use category are eventually displaced. This first step is certain and essentially baked into the code. What's much less certain is the second step: whether allowing a preferred use ensures the city will get such a business after the original business has departed. In this way, use prohibitions act with more certainty in their ability to eventually displace and less certainty in their ability to eventually attract.

For instance, allowing creative office and technology uses in industrial mixed use areas, as described in Recommendation 1.2, does not guarantee that a new creative and technological hub will appear in Tigard overnight or even in the longer term. It depends on how the economy transitions over time and whether those particular users are attracted to the employment spaces, amenities, and locational advantages of Tigard over other areas. As shown in the existing conditions section, Tigard has a cluster of professional and technical services businesses. Zoning allows that cluster, but is not responsible for its existence. In sum, prioritize the known impact - likely displacement - over the less-certain potential.

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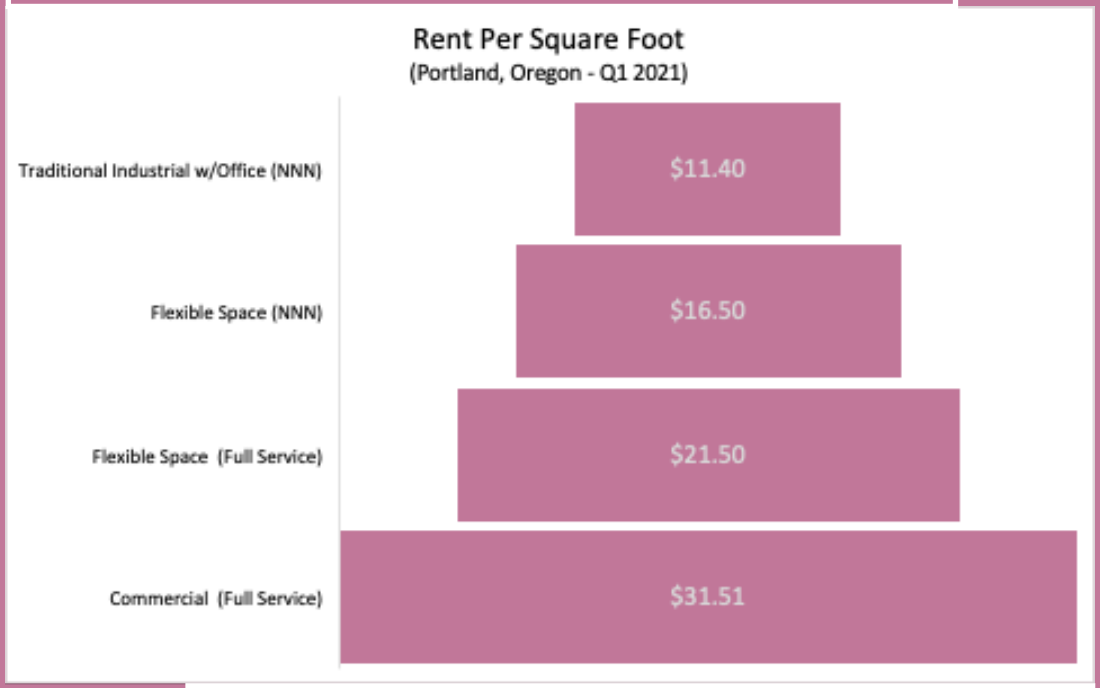
2.1 Increase Flexibility for Smaller Spaces within Employment Zones

Recommendation

As part of the Tigard MADE rezoning, Tigard should increase flexibility in industrial developments by encouraging development or redevelopment to include more small affordable employment spaces (less than 5000 sq ft) within industrial zones. Smaller spaces can offer affordable options for small or minority-owned businesses, encourage entrepreneurship, and help retain local workers.

Tigard should promote the creation of flex industrial space, whether it includes office, warehouse, light industrial, or a combination of all three. As the name suggests, this real-estate subtype can work for a variety of business types and sizes and often comes in smaller square footages than traditional industrial space, boosting affordability. Flex space works well for start-ups, because the rates are typically much lower compared to traditional office space and can accommodate more parking than bulk warehouse buildings.

Figure 42. Affordability of Flexible Space vs. Traditional Industrial vs. Commercial



Source: CBRE Research, Q1 2021 (investor-owned office buildings, 10,000 sf. ft. or greater)

Justification

Decreasing supply of available employment land, increasing land values, and pressure to convert industrial land to residential or commercial use are threatening industrial lands throughout urban metropolitan areas and their suburbs. In order to grow employment space and add jobs, cities are forced to either extend their zoned areas outward (potentially eating up precious green space) or densify their existing lands. Flexible spaces are one solution to infill underused employment lands both by building on smaller lots and adapting/maximizing existing industrial buildings.

These smaller spaces provide opportunities for businesses to take root without overextending their financial resources. Minority owned businesses have historically had less access to capital and can have difficulties finding adequate spaces to lease. Flex space can provide space in central locations that are often out of reach for these underfunded businesses.

Smaller spaces can add to an agglomeration economy by encouraging collaboration among nearby businesses - necessarily sharing resources (e.g. Portland's commissary kitchens and fresh produce resources), attracting a similar customer base (e.g. Portland's numerous entrepreneurial bike manufacturers & graphic arts offerings), and growing a skilled labor pool (e.g. Richardson and University of Texas technology force collaborations).[1]

Flex space advantages:

- Affordable lease rates per square foot compared to Class A or B office space, which improves opportunities for small businesses to get started without huge outlay of capital. With smaller upfront costs, businesses can test the market before committing to large investments.
- Uses can be mixed in a single location, meaning that operations can be consolidated, i.e. warehouse storage with office, and lab. But flexible space also allows businesses to grow in place. Companies that initially choose flex space because of price and location can opt to add office space as they grow and mature.
- Direct access via loading areas to overhead loading doors tenant space is often available.
- The tenant may be able to monitor and exercise more control over utility costs and business security.

As noted in the case studies, Richardson and Portland both encourage flexible space in their employment land zones.

A floor plate comprises the amount of leasable square footage on an individual floor of a building. Wide open floor plates like those common in Richardson's expansive industrial warehouses allow for custom-designed spaces that fit a wide variety of business types. However, as seen in Portland's adaptive reuse of historic multi-story buildings, even smaller floor plates may offer options to divide the space up into different sizes. Small businesses can customize the space to maximize its utility and streamline operations.

And importantly, these flexible spaces allow businesses to quickly react to market directions and shift the amount of space dedicated to portions of their production.

The building inventory in Tigard has the perfect set-up for flexible industrial space – typically defined as a single story, industrial-type building with floor plates ranging between 70 and 120 feet wide, 16 ft+ ceiling heights, and a generous parking ratio (4:1,000). These aging buildings that cannot quite accommodate newer industrial demands are perfect for adaptive reuse. Reusing the existing building inventory rather than tearing it down and rebuilding with new materials promotes sustainability. Tigard's industrial buildings are prime flexible space opportunities; their location along the transportation arterials gives small businesses an extra boost by being visible and accessible to suppliers and customers. Tigard's proto zones, IL and IH, should continue to allow these smaller spaces, by not adding restrictions which prevent smaller lots from coming on the market. Preserving and expanding these affordable spaces are sustainable and equitable not just by increasing capacity of employment but by augmenting the amount of leasable spaces specifically attainable by small business owners.

Flexible industrial space often necessitates plentiful parking because in many cases 25% or more of the building contains an office buildout that requires a higher parking ratio than industrial alone.[2] However, Tigard's access to current and future mass transit routes and increased bike infrastructure indicate there is opportunity to decrease the vast amount of land dedicated to parking and fill in with smaller and/or taller buildings devoted to start-up enterprises. See Recommendation 2.2 for additional parking policies.

There are limitations to this recommendation. The challenges primarily affect developers who must provide an array of building options to suit different needs (i.e. loading docks, tall ceilings, wide doors, etc.). The roofing for flexible space may need to accommodate the weight of extra air-conditioning units and the building may need to handle power demands or internet needs that may be greater than the typical warehouse. Investors (e.g. REIT) often shy away from flex space due to higher construction costs, more management costs, and less creditworthy tenants. And, depending on the market, developers may risk higher vacancy rates by leasing out smaller spaces to multiple businesses rather than one large company. Still, this building format offers a strong path forward for advancing both equity and sustainability through the blunt tool of zoning.

Benchmarks

To gauge these entrepreneurial achievements, the City of Tigard should track the vacancy rates of spaces by size and annually track the numbers of employees associated with start-up businesses to monitor whether the businesses are thriving and growing.

2.1.1 Maintain or Decrease Minimum Lot Requirements, Setbacks, and Height Limits

Recommendation

The City of Tigard currently has zero minimum lot sizes for most of its commercial and industrial zones, except the C-N, C-C, and C-P zones. To encourage density and opportunities for infill that would provide smaller spaces for start-up businesses, the City of Tigard should extend the standard of zero minimum lot sizes to all employment zones. Likewise, the City of Tigard should reduce or eliminate its setback allowances in industrial and commercial zones, since setbacks disproportionately impact small lots, discouraging their creation. Finally, the City of Tigard should repeal height limits in exclusive industrial zones (I-L & I-H), as seen in Richardson and Portland, though it should maintain height limits in commercial zones to offer height/FAR bonuses as an incentive (See Recommendation 3).

Table 13. Proposed Industrial Zone Development Standards for Existing Zones

Standard	I-P	I-L	I-H	C-G	Proposed I-L & I-H
Minimum Lot Size	0 ft	0 ft	0 ft	0 ft	0 ft
Minimum Setbacks					
- *Front*	35 ft	30 ft	30 ft	0 ft	0 ft
- *Street side*	20 ft	20 ft	20 ft	0 ft	0 ft
- *Side* *	0 ft	0 ft	0 ft	0 ft	0 ft
- *Rear* *	0 ft	0 ft	0 ft	0 ft	0 ft
Maximum Height	45 ft	45 ft	45 ft	45 ft	NONE

*Minimum side and rear setbacks are 0 feet, except the minimum side and rear setbacks where the site abuts a residential zone.

Justification

To compensate for limited available greenspace, Tigard must add floor space to existing employment lands to accommodate growth. One way to create this needed density is to increase building height. By eliminating height maximums in industrial zones, Tigard removes an unnecessary barrier to new development. Modern industry entails large equipment and often requires 30' or higher clear heights. In the rare instance that an industrial development would build higher, mezzanine space or second-story office could reasonably push such a structure to Tigard's existing 45' height limit. Removing the height limit would proactively allow additional evolution for a user dedicated to their site. Meanwhile, requiring strict industrial use via exclusive-use zoning prevents the encroachment of unwanted uses (See Recommendation 1).

Reduced setbacks likewise could facilitate onsite infill, as observed in a Richardson warehousing space after the city decreased its setback requirements. Setbacks disproportionately disadvantage small parcels by consuming higher percentages of small lots' total area than large lots' total area. For example, a 10-foot front setback consumes 10% of a 100-by-100 foot parcel, whereas that same setback consumes only 5% of a larger 100-by-200 foot parcel. Removing setback requirements eliminates that particular barrier to subdividing commercial lots into smaller, more affordable pieces.

This process of zoning to facilitate the creation of smaller lots is particularly beneficial to small businesses, which is an equity enhancing prospect for a variety of reasons. One is that 99.9 percent of female-owned employer businesses have fewer than 500 employees and are considered small businesses.[3] Many of these women owned companies start out in homes and logically must find the next most affordable space available when they want to grow. Another reason is that affordability in general is equity enhancing. Regulations that discourage affordability have disproportionate negative consequences on disadvantaged socioeconomic groups. People with high incomes and wealth can navigate less affordable conditions due to their relatively greater resources. However, lower income and less wealthy people (who disproportionately come from historically marginalized groups) have greater difficulty absorbing such costs.

Setback Regulations Near Wetlands and Riparian Areas

Clean Water Services (CWS), the City of Tigard's water and sewer service provider, maintains regulatory control of setbacks near wetlands as well as other "sensitive" riparian areas in its jurisdiction, such as streams and the Tualatin River. Those setbacks override those listed in Tigard's municipal code. To ensure clarity and transparency as to which setbacks apply, Tigard should include a footnote in its development standards table indicating that CWS's regulations apply near wetlands and riparian areas. That footnote should link to CWS's construction and design standards, cited here.[4] Attune Planning could not locate a map of CWS's Sensative Areas to clarify further the parcels to which these additional regulations apply. However, the MetroMap online tool from Portland's Metro regional government could prove useful.[5] That online map shows wetlands and riparian areas in Tigard, and could serve as a first check for property owners and prospective developers

as to whether CWS's regulations will apply. Concerned developers and property owners could then schedule pre-design meeting with CWS using the organization's intake form.[6]

Benchmarks

Tigard should measure the success of its minimum lot requirements, setbacks and height limits by tracking the increase in business growth rate in Tigard's employment areas. If Tigard is seeing a noticeable increase in the number of businesses established in revised zones, as well as an increase in numbers of total employees year over year, then this benchmark shows that these relaxed development regulations are successfully adding density to Tigard's employment lands.

2.1.2 Allow Flexibility in Design Standards for Industrial Users

Recommendation

Tigard should consider waiving design requirements for industrial users. As with Recommendation 1.1.1, the City of Tigard should inform its decision as to which requirements to waive through conversations with existing industrial users.

Justification

In an interview with Andrea Lavin-Kossis of the City of Pittsburgh, we learned that design requirements were seen as a potential impediment to industrial users attempting to modernize or deploy cutting-edge equipment. Andrea gave an example of a heavy industrial user that wished to install air-quality enhancing "scrubbers" that might not comply with local design standards. By waiving such requirements for industrial users, the city helped ensure that industrial users could focus on adapting, remaining competitive, and adding local economic opportunity for Pittsburghers. Table 14 contains examples of design requirements waived in Pittsburgh's RIV-GI industrial zone.[7]

Table 14. Proposed Industrial Zone Development Standards for Existing Zones

Concept	Details
Materials	"The following building materials are prohibited on any façade: (1) Plain concrete block, restriction does not apply in the RIV-GI Subdistrict or to Basic Industry and Assembly and Manufacturing [uses] where not visible from the public realm including rivers."
Unified Architectural Theme	RIV-GI is exempted from the following: "Façades must be designed with consistent building materials and treatments that wrap around all façades. A unifying architectural theme must be used for the entire development, using a common vocabulary of architectural forms, elements, materials, and/or colors."
Mechanical Equipment	RIV-GI is exempted from the following requirements: "Roof mounted equipment visible from the proximal public realm must be screened... Wall-mounted mechanical equipment is not permitted on any façade abutting a primary street frontage."
Building Entry	RIV-GI is exempted from the following requirement: "Public entrances on any façade must be designed as visually distinct elements of the facade."

Source: Pittsburgh municipal code, Chapter 905

2.2 Eliminate Minimum Parking Requirements

Recommendation

Requiring a minimum amount of parking subsidizes automobile commuting, increasing carbon emissions. It also forces individuals without car access to de facto pay for parking when shopping because the cost of building and maintaining required parking is incorporated into stores' prices. **The City of Tigard should eliminate minimum parking requirements for vehicles and maintain some form of parking maximums.** If the City of Tigard wishes to pursue a highly progressive solution, it should mirror Pittsburgh's approach from its riverfront rezoning, replacing its maximum parking requirements with its previous minimum parking requirements.

Justification

Parking requirements add to the overbuilt parking in Washington County

A 2017 study of commercial and multifamily developments in Washington County, OR found that off-street parking is routinely overbuilt.[8] On average, 5.15 spaces were built per 1,000 square feet of development. Yet, only an average of 3.2 spaces per 1,000 square feet were actually demanded—an amount roughly equivalent to Tigard's minimum parking standard for retail.[9] Said another way, Tigard's *minimum* parking requirement for retail is similar to Washington County's *average* demand. Definitionally, this suggests that parking demand is often lower than this example parking minimum in Tigard, likely resulting in unused space and empty parking lots. In such cases, Tigard's minimum parking requirements would force developers or business owners to provide that parking anyway at an estimated cost of $5,000-$10,000 per surface-lot space or $18,000 per structured space, not counting maintenance and replacement.[10] Unfortunately, these sorts of requirements have consequences that hinder equity and sustainability outcomes.

This table comes from the study described above and details Washington County's overbuilt parking and its costs.

Table 15: Parking Built and Demanded in Washington County, OR

City	Actual Built Supply/ 1000 SF	Actual Demand/ 1,000 SF[3]	Gap between parking built and actual parking demand	Percentage of overbuild to actual demand	Avg. Additional Cost per 50,000 gsf (surface parking)[4]	Avg. Additional Cost per 50,000 gsf (garage parking)[5]
Beaverton, OR	4.15	1.85	2.30	124%	$805K	$3.68 mil.
Bend, OR	3.0	1.90	1.10	58%	$385K	$1.8 mil.
Corvallis, OR	2.0	1.50	0.50	33%	$175K	$800K
Milwaukie, OR	3.00	2.14	0.86	40%	$301K	$1.38 mil.
Oregon City, OR	2.00	1.43	0.57	40%	$200K	$912K
Redmond, OR	2.62	1.54	1.08	70%	$378K	$1.73 mil.
Salem, OR	3.15	2.04	1.11	54%	$385K	$1.77 mil.
Springfield, OR	1.88	1.11	0.78	70%	$273K	$1.25 mil.
Washington County, OR	5.15	3.21	1.94	60%	$320K	$2.4 mil.

Source: Washington County, OR Department of Land Use and Transportation

Requiring parking is tantamount to requiring a subsidy for commuting by car, promoting vehicle miles traveled and carbon emissions.

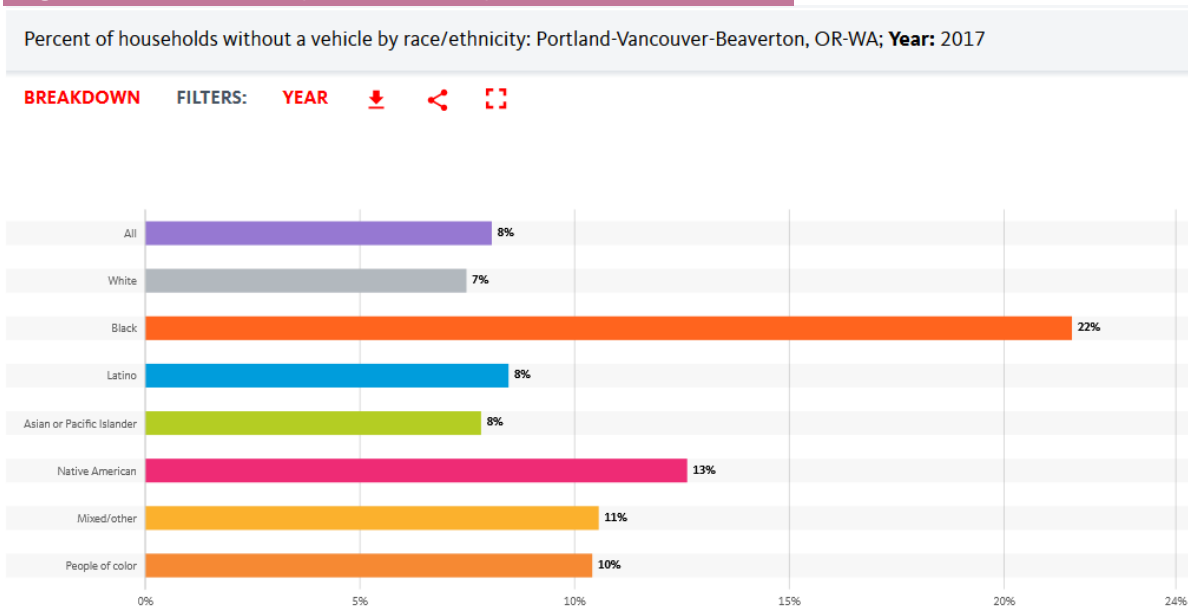
UCLA planning researcher Donald Shoup provides a seminal example.[11] "If a parking space costs $124 a month [to build and maintain as it amortizes], and a commuter works twenty-two days each month… a commuter who parks free in this space therefore receives a parking subsidy of $5.64 a day." After breaking down the subsidy on a per-mile basis, then comparing it with a vehicle's per-mile operating cost for gas, oil, maintenance, and tires, Shoup concludes, "the subsidy for free parking *at* work is triple the vehicle operating cost for driving *to* work." It's hard to overstate the impact of such large, ubiquitous subsidies for car commuting. Undoubtedly, it contributes significantly to the vehicle miles driven each day and the amount of carbon emitted, propelling climate change forward. One might further note that the $5.64 subsidy is more than a TriMet day pass, which costs $5.

Requiring parking reduces affordability, and even people who can't afford cars have to pay

In an interview, Tony Jordan, President of the Parking Reform Network, extended the above idea from Shoup.[12] He suggested that because parking costs money to build, those costs are ultimately passed on to businesses that rent commercial space as well as their customers. As discussed previously in this report, regulations that raise costs and reduce affordability have disproportionate negative consequences on disadvantaged socioeconomic groups. People with high incomes and wealth can navigate less affordable conditions due to their relatively greater resources. However, lower income and less wealthy people (who disproportionately come from historically marginalized groups) have greater difficulty absorbing such costs.

This is *particularly* unfair because demographic and socioeconomic groups do not have equal access to cars. For instance, the National Equity

Figure 43. Car access by race/ethnicity in Portland MSA, 2017



Source: www.nationalequityatlas.org

Atlas shows that Black residents in the Portland region are three times as likely to not have access to a car than their White counterparts.[13] Not only does requiring parking favor those with access to cars, those without access to cars still pay for that parking when they shop at businesses that were required to build it.

Urban and suburban precedents followed a trend toward smaller or no minimum parking requirements

When rezoning areas along its riverfront, the City of Pittsburgh lowered its parking minimums and replaced its parking maximums with its previous minimums.[14] Likewise, when rezoning its Innovation District, the City of Richardson lowered parking minimums in its Employment Subdistrict. In a unique approach particularly supportive of small businesses, it eliminated parking requirements for offices and industrial spaces under 5,000 square feet.[15]

Importantly, eliminating minimum parking requirements is not the same as eliminating parking. Developers will still build the amount of parking they believe the commercial or industrial space needs to succeed and attract investors. However, developers appreciate the flexibility to make their own determination, as they expressed in interviews with City of Tigard staff for Tigard MADE.

2.2.1 Maintain and Improve Participation in Tigard's Shared Parking program

Recommendation

The City of Tigard should continue to allow joint parking / shared parking agreements between land users to be submitted with land use applications. Further, Tigard should consider incentivizing shared parking agreements with additional development entitlements. To date, developers in the Portland Metropolitan area have shown little interest in taking advantage of shared parking programs, and Tigard should adjust the incentives to make the program more palatable and utilized.[16]

Justification

Maximizes parking utilization efficiency while mitigating actors' concerns

The purpose of shared parking agreements is to free up land that would otherwise be devoted to parking. A number of benefits occur when less parking is built that range from environmental benefits like less impermeable surface to economic benefits such as increased intensity of Tigard's employment lands. Barriers exist at multiple levels that act as disincentives to shared parking agreements as a mechanism to conform to parking standards. On behalf of Metro, Stein Engineering conducted an analysis of the Portland Metropolitan's many local jurisdictional development codes regarding shared parking allowances complete with public involvement to identify key concerns.

The most notable concerns regarding shared parking agreements came from financiers, developers and business owners. Financiers showed concerns of investing in projects that are unlike industry standards, and when they do, undergoing alternative ways to meet standards can be calculated as higher risk - an outcome of which could be the reduction in funding.[17] Developers had concerns that tenants would find developments with less parking less attractive and find it difficult to navigate new processes to comply with code.[18] Businesses have little involvement with and limited understanding of shared parking as they rarely interact with municipal code and the development phase of project planning. However, businesses are concerned that less parking supply would negatively impact the success of their business as they rely heavily on pass-by traffic.[19] This results in a feedback loop where developers are encouraged to construct large amounts of parking to appease financiers which aim to make the most attractive places for businesses to locate. Financiers and developers do not have complete information about the end user and therefore try to design for the widest audience.

All parties involved may lack understanding of the technical aspect regarding the relationship between parking, land use, and business model. This complex series of actors and interactions make shared parking agreements that are allowed outright in code to be an unfruitful avenue to comply with development standards.

However, shared parking agreements take advantage of the fact that differing uses have different parking demand patterns.[20] Most parking spaces are not utilized full time by a particular user or a particular group of users. When shared parking agreements are allowed between sites those different peak periods can be leveraged to reduce the number of stalls while still serving the site. Tigard's employment lands are well-suited for shared parking agreements. The spatial layout of businesses, with shared access points and parking lots that flow into one another conveys a sense of shared space already. By consolidating parking under a shared agreement, Tigard can increase the amount of buildable land without expanding its growth boundary.

Improvements

A way to improve participation of shared parking agreements is through the use of incentives as this contributes to the goals of Tigard to use employment lands more efficiently. Incentives Policy Recommendation 3.2.3 provides a menu list of incentive packages.

Benchmarks

The City of Tigard should track the number of shared parking agreements over time and develop goals around increasing the number of approved shared parking agreements.

2.3 Adopt Better Green Building Standards

Reccomendation

We see three paths in Tigard to achieve greener building standards. The first route, detailed below, calls for emphasizing the results of energy efficiency building standards over how those goals are achieved (Policy Recommendation 2.3.1). The second route is by incentivizing green building standards (Policy Recommendation 3.2.2). The third route is a hybrid between the first two paths, in other words, requiring a certain level of energy efficiency results without certification and offering incentives for those that go above and beyond those required development standards.

Requiring a baseline of green energy standards will require in-house expertise on green building standards as Tigard will be responsible for tracking data and specifying the building standards that can reach the desired level of efficiency. This route will also require Tigard to regularly review and update your code to make the baseline requirements keep pace with innovation in green building standards. The benefit, though, is requiring building standards that are both climatologically and contextually relevant to Tigard and Tigard's values, both of which may be attractive to developers.

Alternatively, Tigard can take the route of requiring third-party certification by LEED, Earthcraft, or whatever program it opts for. This option would not require as much in-house expertise, nor would it require keeping as close of an eye on innovations within green building construction. However, this does have an impact on affordability as third-party green building certifications increase developer/owner costs and the overall affordability of the building.

Lastly, the hybrid option requires that Tigard maintain a level of proficiency in green building standards like the first route, but allows developers the flexibility and bonuses of the incentive structure from the second pathway which could result in even more energy efficient developments.

We recommend Tigard carefully consider all three routes and reflect on Tigard's organizational capacity to become experts to determine which route would be best.

Justification

As part of mandating energy efficient construction of new buildings and upgrading the efficiency of older structures, adding environmentally friendly design features can improve the sustainability of buildings and reduce water, air, and light pollution citywide. Constructing energy efficient buildings supports the health, safety, and welfare of communities by improving air quality inside and outside of buildings. Green building lessens loads on public utilities and reduces operational costs to building owners which can help offset the additional cost in construction. Adopting energy efficient building standards also prepares local governments to respond quickly to changing state and federal greenhouse gas reduction requirements.

Collectively, efficient structures mitigate the effects of climate change by reducing greenhouse gas (GHG) emissions and other pollutants and improving the resilience of the built environment by stabilizing electricity prices and utility demand volatility. Because new construction only accounts for a portion of a city's inventory, it is vital to also retrofit existing buildings to also make them more energy efficient. Energy efficiency standards were repeated themes in the precedents.

Tigard has very little greenfield available for new industrial development, however there is a plethora of potential redevelopment. The City of Tigard lacks a Climate Plan that would outline goals around carbon emissions, building performance, and more. This is an opportunity for the City of Tigard to take the lead in Oregon and establish itself as a green city.

2.3.1 Establish a Minimum Energy Efficiency Standard of LEED-Silver or Similar, and Create a Financial Mechanism to Hold Developers Accountable

Recommendation

Tigard should develop a minimum energy efficiency standard for new commercial buildings of LEED-Silver or similar. LEED-Silver standards are slightly higher than current building standards, adding minimal additional costs to developers while demonstrating a commitment to energy efficiency and green building. Additional incentives should be offered for more rigorous building certification, as outlined in Recommendation 3.2.

Justification

LEED buildings meet extensive criteria around green building requirements and energy efficiency. The certification is shown to be an amenity in and of itself for attracting tenants, as seen in Alpharetta. And while Oregon building standards are not far behind LEED-Silver, requiring the certification demonstrates the seriousness with which Tigard intends to pursue green buildings. Further, this minimum requirement will fit in nicely with the energy efficiency incentives outlined in Recommendation 3.2.

Tigard can choose to forego LEED-Silver and pursue other minimums, and we encourage Tigard to choose the minimum that best reflects its values and operational capacity. Ultimately, we are certification-agnostic, but advocate for the adoption of some sort of minimum.

In order to hold developers accountable to achieving certification, Tigard should create a green building bond at a cost-per-square-foot commensurate with the costs of certification. This is similar to what Arlington, VA does. Currently, that cost is $\$0.45/ft^2$, but Tigard should confirm that price is applicable to LEED-Silver requirements in Oregon. Again, dovetailing with incentives, that bond price can be adjusted to the certification and change with the incentives outlined in Recommendation 3.2. Tigard should also adopt the approach taken by Alpharetta, which assists developers by offering expedited plan review, plans processing, and site inspections for all LEED, EarthCraft, and EnergyStar certified projects to defray development costs.[21] Upon certification, developers will be reimbursed for their bond and any forfeited bonds should be used for targeted energy efficiency improvements or other programming for small businesses and minority and women owned businesses.

2.3.2 Require Owners of Non-Residential Buildings Over 50,000 Square Feet to Report Their Utility and Waste Data to Energy Star Portfolio Manager in an Effort to Meet Performance Targets by Actively Improving Their Buildings Over Time

Recommendation

Tigard currently does not have a Climate Plan. Such plans are increasingly becoming a standard planning tool for cities, and we recommend that Tigard adopt one. Specific to MADE, a Climate Plan will benefit from stronger data on current building performance, data that does not currently exist. Tigard should require that owners of large non-residential buildings utilize Energy Star Portfolio Manager to track their energy and water use as well as waste produced, and report this information to the city on an annual basis. Energy Star Portfolio Manager is an online resource that helps owners/managers track building performance with comparisons to similarly built buildings nationwide, regardless of age or construction technique. By having access to this data, Tigard is able to track building performance by neighborhood as well as citywide, which could then be utilized to inform building performance goals in a future Climate Plan.

Justification

In 2015, Portland adopted the Energy Performance Reporting Policy for Commercial Buildings which requires commercial buildings more than 20,000 square feet to track and report their annual energy use using the Energy Star Portfolio Manager tool. The City of Portland also publicly publishes this benchmarking data for applicable buildings.[22] Participating in programs such as Energy Star Portfolio Manager where utility information is tracked is typically considered a first step toward full fledged energy management programs such as ISO 50001, a series of standards developed by an independent, non-governmental international organization. ISO 50001 provides a framework of requirements for organizations to better understand and make decisions about energy use, measure the results, and continually improve energy management.[23]

In 2016, Pittsburgh joined the City Energy Project (CEP), a national initiative to improve the energy efficiency of buildings, to help reduce the city's energy use, water consumption, and carbon emissions. By partnering with CEP, Pittsburgh developed methods to make older buildings more efficient. To identify inefficiencies, Pittsburgh requires owners of non-residential buildings larger than 50,000 sq ft, to measure their energy and water use, and submit their usage data annually.[24] And, as of 2019, Pittsburgh requires all new or renovated government buildings to be net-zero, producing as much or more energy than they use. Tigard should adopt the 50,000ft^2 threshold as Pittsburgh did and then examine results and refine the threshold based on those results.

2.3.3 Require Ecoroofs, Whether Cool Roofs or Green Roofs, on at Least 15% of Roof Surface of New Buildings Over 10,000 Square Feet

Recommendation

The City of Tigard should ensure that all new buildings over 10,000 square feet are required to incorporate one of these two options in their roof design. In addition to this new building standard, the City of Tigard should incentivize ecoroofs (cool roofs or green roofs) on at least 50% of roof surface of any new buildings.

Justification

A green roof (or living roof) is a layer of vegetation over soil on top of a waterproof membrane. Green roofs replace conventional roofing with a living, breathing, vegetated roof system.

While sometimes more costly to developers to install and maintain than standard roofing materials, the benefits outweigh the burdens when examining broader social costs.

- Green roofs absorb rainwater.
- They reduce and filter stormwater runoff, minimizing pollution and erosion and preserving fish habitats.
- Green roofs improve air quality by filtering air pollutants and absorbing carbon dioxide.
- Green roofs can provide food and urban green space and recreational areas for residents.
- Green roofs increase bird and beneficial insect habitat.
- For building tenants and owners, all ecoroofs reduce the need for heating and cooling inside buildings and help mitigate the urban heat island effect.

The EPA estimates green roofs start at about $10 per square foot for simple projects, or up to $25 per square foot for more elaborate designs.[25]

Portland has had a very successful eco roof incentive program. From 2008 to 2012, the Bureau of Environmental Services (BES) offered property owners and developers an eco roof construction incentive of $5 per square foot. Ecoroof costs varied according to project size, design, and complexity. BES granted almost $2 million in incentives that helped fund over 130 projects that created more than 8 acres of ecoroofs that manage an average of 4.4 million gallons of stormwater annually.[26] As of 2018, Portland requires ecoroofs to cover at least 60% of the roof surfaces on new Central City buildings of 20,000 square feet of net area or more within certain zoning, as part of the Central City 2035 Plan. However, that standard may be overly ambitious. As of summer 2019, only one in four Portland buildings were found to be compliant with the new standard.[27]

Alpharetta's eco district zoning in the North Point area incentivizes green roofs in an effort to mitigate storm water issues. The minimum

Figure 44. Portland's Incentive Numbers

Image Source: City of Portland

required to qualify for points in their program is 50% coverage of the total new building roof area, including parking structures. Developers are required to provide documentation of construction plans with drainage and planting details.[28]

As part of Arlington's voluntary Green Building Incentive program, a prerequisite to obtain an FAR bonus is the integration of a vegetated roof with on-site solar generation on at least 12% of new buildings.[29]

According to City documents, the City of Tigard's biggest natural threat is flooding. "Floods are Tigard's most frequently occurring natural disaster. The 100-year floodplain includes six streams and 7.9% of all land area in Tigard."[30] As a result, since 2008, development has been restricted in floodplains. But the City of Tigard should also mitigate storm water flood potential by requiring ecoroofs on new buildings.

Alternately, while not a solution for stormwater management, the cool roof option could help reduce Tigard's heat island effect which, as a result of large building footprints and proximity to freeways, is especially pronounced in it's industrial lands. Cool roofs are even cheaper than living roofs to install - $0.75 to $1.50 per square foot for the reflective paint.

Painting rooftops a reflective white (or the brilliant blue color developed by OSU researcher Mas Subramanian[31]) transforms them from absorbent to reflective surfaces and reduces internal building temperature by up to 30 percent, lowering utility consumption and its associated CO2 emissions. Given that air conditioning constitutes approximately 5% of electricity used in the U.S. and upwards of 40% of daily use during hotter months, reducing its usage is an effective way to reduce energy consumption. Cool roofs can also reduce the temperature of the roof surface, extending the life of the materials.[32]

In 2013, Pittsburgh initiated the Cool Roofs program, based on New York's "Cities of Service: Cool Roofs Blueprint," which relatively inexpensively upgraded the sustainability of city-owned buildings by coating the roof surfaces with white reflective paint. In its first year, 10 roofs were coated, covering approximately 50,000 square feet and reducing the city's CO2 emissions by 50 tons. Funded by $56,000 allocated from a Cities of Service Impact Volunteering Fund Grant and $25,000 from the City's Green Trust Fund, Cool Roofs was a combined city and volunteer effort.[33]

As part of the green standards for eco districts in Alpharetta, cool roofs are being purchased for new and renovated city buildings. Per Alpharetta's code, a cool roof is defined as a roof that uses reflective surfaces having a Solar Reflective Index for a minimum 75% of the roof surface and that is certified by Energy Star.

While an aerial survey of Tigard shows that the majority of industrial buildings are already white, not all of these may be utilizing the reflective white paint that ensures roof cooling outcomes. Certainly, very few, if any, of these buildings have incorporated a green roof. Adopting these standards will nudge Tigard towards more sustainable infrastructure.

Figure 45. Example of Green Roof on Commercial Building

Image Source: Archtizer.com

Benchmarks

To gauge the success of green roofs, it is important to monitor the air and surface (roofs, pavement, etc.) temperatures of these industrial and commercial areas in comparison to the number of green roofs installed in the same vicinity, over time. The City of Tigard must track and compare the heat island effects in the employment areas with the temperatures in the surrounding areas.

2.3.4 The City of Tigard Should Establish Night Sky Requirements by Adopting an Outdoor Lighting Ordinance or Code

Recommendation

The City of Tigard should implement exterior lighting guidelines for commercial and industrial buildings to reduce sky glow, as well as continue to educate the public about the benefits of reducing nighttime light pollution.

Justification

The urban ecosystem is threatened by artificial illumination. Increasing exterior lighting to address safety and the widespread adoption of extremely bright LED bulbs have adversely affected natural human circadian rhythms and profoundly altered insect and bird habitats. Night Sky standards address this issue by limiting the amount of light cast beyond the points on the ground of buildings necessary for visibility and safety. These standards enhance the visibility for pedestrians, cyclists, and drivers because the light is directed downward rather than towards viewers, reducing glare. Night Sky standards also increase the visibility of stars by reducing "sky glow" from nighttime urban environments. Night Sky Requirements reduce energy wastefulness of light pollution and contribute to improvement of biological and ecological health.

In addition to eco roofs, Alpharetta's North Point overlay requires new buildings to comply with the Night Sky requirements, which sets standards for outdoor lighting, minimizing light pollution. For example, all exterior light fixtures are required to be shielded and must be positioned either directly toward the ground or at no more than a 45 degree angle.

Figure 46. Spill Lighting, Glare and Skyglow

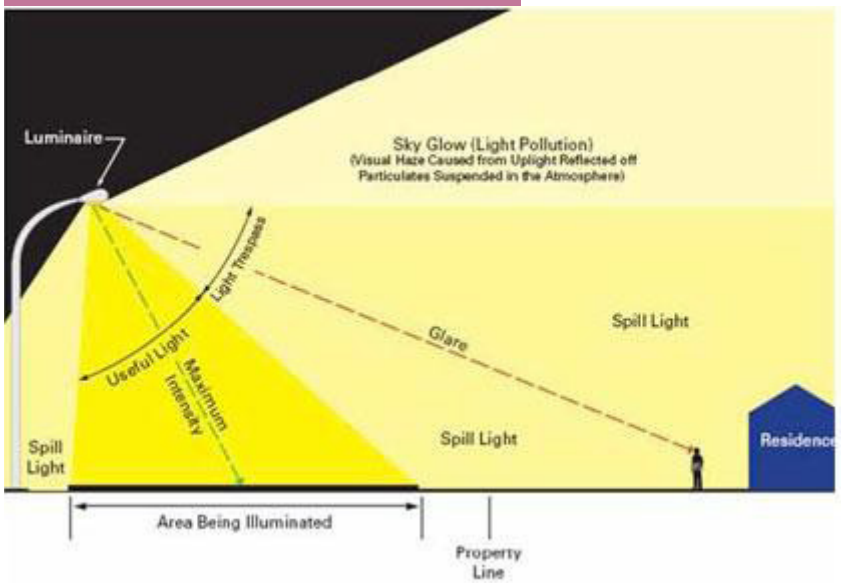


Image Source: Federal Highway Administration, USDOT[34]

Arlington's Green Building Incentive Policy includes a provision requiring 90% of all exterior lighting to comply with the International Dark Sky standards, as a baseline standard to achieve additional FAR. The International Dark Sky Association sets standards for environmentally appropriate lighting fixtures; some of the specifications include warm lighting no cooler than 3000 kelvin, and fully shielded light fixtures emitting light below 90 degrees.

Although a suburban city, Tigard is still prone to misdirected outdoor lighting at night. Oregon has a State law on outdoor lighting which applies to public buildings (ORS 455.573), but there is no statewide law for residential or commercial buildings. To increase equitable accessibility, Tigard's employment areas need more lighting for pedestrian and cyclist safety, but these lights should be added appropriately, with thought for the environment. Tigard's abundance of parks and wetlands also necessitate the consideration of healthy bird and insect habitats.

Benchmarks

A relatively easy way to assess and monitor light pollution throughout the City of Tigard is through imaging and photometric techniques at established intervals, whether annually or monthly. [35]

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3.1 Craft an Incentive Structure for Your Zoning Code

Recommendation

An incentive structure is an effective way to ensure that developers incorporate elements into their projects that help meet community goals and priorities around equity and sustainability that otherwise could not be legally mandated through zoning or the outright requirement would have other negative impacts.

Justification

All of our case studies viewed incentives as a critical way to gain concessions from developers that would contribute to public amenities or incorporate elements that meet community values. However, out of all of the case studies, Pittsburgh incorporated the most comprehensive set of development incentives within their zoning code. Pittsburgh's incentive structure offers a height bonus or a decrease in the riparian barrier - the distance between the building envelope and the riverfront - in exchange for incorporating certain types of amenities into projects.

Crucially, Pittsburgh's incentive structure is a tiered system, which allows for between one to three bonus points depending on the element included in a developer's design and project. Each bonus point allows for either a ten foot additional height bonus or ten foot reduction in the riparian barrier required between the building envelope and the riverfront.[1] (See Appendix B for Pittsburgh's full incentive structure).

While Pittsburgh opted for a density bonus or reduction in the riparian barrier, there are other incentive options such as reducing/waiving system development charges, property tax abatements, fast-tracking permits, and more (see Policy Recommendation 3.1.1 for more discussion).

Incentive Structures Must be Carefully Crafted and Consider What Types of Developments are Possible.

A city can structure their zoning code to make the maximum by-right allowable building height or floor ratio ratio be below what the market can support. However, this must be done with extreme caution to avoid legal concerns. For example, lowering the by-right maximum height from 90 feet to 60 ft in a zone where developers already built above 60 feet could qualify as an illegal taking.

To carefully avoid this, Tigard can learn from Arlington County, Virginia and incrementally raise the maximum building height allowed in commercial and industrial mixed-use zones but not raise the maximum height all the way to the maximum height that the market can reasonably support. Instead, keep the building height 10 to 20 feet lower than what the market can maximally support to incentivize developers to utilize Tigard's incentive structure to provide for public amenities.[2]

Careful consideration must be given to the maximum building heights allowed to ensure that an increase in building height will still result in a viable structure. Currently, the most common construction types are wood, podium buildings, or steel towers. Wood structures are built entirely of wood and can support a maximum of 3 floors in a walk-up style. Podium buildings include a concrete podium on the first one or two floors with up to four floors of wood construction on top, which caps the maximum height for podium buildings at 6 stories or roughly 65 to 75 feet depending on ceiling heights. Currently there is a gap between 6 floors and 12 or 13 floors when steel framed buildings begin to reach the economies of scale necessary to offset the increased cost of steel and labor required. Technological solutions, such as cross-laminated timber, may eventually change these economics but are not yet ready for widespread deployment.

When determining the maximum heights for each zone and how much additional height can be added in total from incentives, Tigard should carefully consider these constraints that developers face. Currently, the I-P zone has a maximum height of 45 feet, which is roughly 3 to 4 floors (but more often 3 floors due to developments commonly increasing ceiling heights on the ground floor). Developers should be able to increase their building height to 65 to 75 feet with incentives. Commercial zones in Tigard currently max out at 30 to 35 feet, which is roughly two or three floors. Tigard should consider allowing for more height in these zones via incentives. Lastly, the current MU-E zone allows up to 200 feet in building height. This maximum should be maintained but allow developers to build taller via incentives.

Benchmarks

To evaluate how effective an incentive structure is, city staff reviewing permit applications for new developments or significant rehabilitations must track which incentives are being used more often and which are not as popular. After the program has been in place for a few years, the City of Tigard should analyze which incentives have been the most and least popular to determine if recalibration is necessary to require more concessions from developers on popular incentives or to reduce the amount necessary to qualify for underutilized incentives.

Tigard should also track a ratio of rent asked for in commercial and industrial spaces compared to the Portland Metropolitan Area average rents for these same uses. If rents surpass a ratio of 1.0, then rents in Tigard are higher than the average rent level in the Portland Metropolitan Area. If the ratio rises quickly after the incentive structure, rents may be rising as a result of increased development costs due to the need to add incentives. At that point, if Tigard wants to remain comparatively affordable for development in the region, the incentive structure should be re-evaluated.

3.1.1 Use Floor Area Ratio as the Primary Bonus to Developers for Offering Public Amenities

Recommendation:

- Utilize a floor area ratio (FAR) or height bonus as your concession to developers for incorporating amenities via your incentive structure.
- Structure the incentives to ask for more around areas which will have higher demand for development (i.e. within a ½ mile walkshed of high-capacity transit stops)

Justification

FAR Bonuses Involve Minimally Direct Cost to Jurisdictions But Big Payoffs to Developers

While Pittsburgh and other case studies tend to offer density bonuses in exchange for concessions from developers, there are other tools that can be used to incentivize developers into providing certain elements into their projects. Other cities have offered streamlining and fast tracking permitting, fee waivers/reductions, tax breaks/credits, grants, low interest loans, and increased technical assistance. However, none of these other incentives are as attractive to developers of commercial and residential developments as a density bonus.[3] Additionally, many of these other options such as fast-tracking permitting and additional technical assistance require additional staff time and could strain the capacity of Tigard's permitting staff. Fee waivers/reductions, tax breaks/credits, grants, and low interest rate loans either cause a loss of revenue or can shift additional risk related to the developments onto the City of Tigard and have a direct monetary cost.

Pairing an incentive structure with density bonuses enables jurisdictions to gain features that contribute to public welfare without any direct monetary cost to taxpayers. Elements incorporated in incentive structures are often requirements that without any additional density bonus or concession from the jurisdiction would otherwise not be financially feasible. Additionally, an incentive structure is a way to incentivize developers to include elements related to equity and sustainability that might otherwise not legally be permitted to be required in zoning code. Tigard can encourage more affordable and smaller commercial units, or things related to promoting publicly accessible trails through private development sites.

However, while a density bonus is more attractive to commercial and residential developers working on new construction or major addition projects, a density bonus is not particularly attractive to industrial developers who often do not build more than two floors. These users, and other circumstances like needing to retrofit existing buildings or those completing

only minor renovations, may require different incentives. Tigard will need to determine which incentive type is the best use of limited monetary resources and staff capacity.

Increase Asks Near Transit Areas

Additionally, an incentive structure may only be feasible in certain areas where demand is high enough. In Arlington, under their Green Building Density Program, which applies county-wide, only those developments near Metro stops have entered into the voluntary program.[4] This is because the market can support higher intensity of land use in those areas. Tigard should consider an incentive structure that applies to employment lands at large but increase the incentives and demands from developers on parcels that are within a ½ mile walkshed of future SW Corridor Light Rail Stops.

It should be noted that most of the incentives in Tigard's code update for employment lands will be used by commercial or residential users. However, as previously mentioned, Tigard's mixed-use zones currently face a large demand for residential development. In mixed-use, employment lands that are not located within ½ mile walkshed of SW Corridor stops, Tigard should offer additional residential use allowance as an incentive for developers to provide amenities to the public or contribute to sustainable development.

3.1.2 Process for Crafting an Incentive Structure

Recommendations

- Engage with the public in Tigard to confirm community priorities for what should be included in the incentive structure
- Engage with developers, both larger and small, emerging, minority, and women owned development firms to ensure that the concessions from developers are roughly proportionate to the amount of FAR bonus granted
- Expect to have to recalibrate the incentive structure after a few years to ensure you are getting the outcomes you desire

Justification

Engage Residents on Their Priorities for Incentives

All of the incentive structures for each precedent reflected the priorities of the area's local political leadership and area residents. To ensure that Tigard's incentive structure meets the desired public amenities of residents of Tigard, engagement is necessary with the community. The incentives outlined in this report are recommended for advancing equity and sustainability, but constituents may hold additional values. A previous survey of residents asking what makes a desirable neighborhood is a good starting point for identifying possible incentive categories, but further engagement should be conducted.

Engage Developers to See What Is a Responsible Ask

An incentive structure within zoning code can only be effective if carefully calibrated to an area's market conditions. Planners in both Pittsburgh and Arlington did not do a comprehensive amount of research or analysis to determine what level of FAR bonus should be offered for what degree of concession from the developer. To craft their incentive structure to ensure that it was reasonable, Arlington negotiated with area developers to determine what the interest was in providing certain design requirements in exchange for a certain amount of density bonus.[5] Pittsburgh, on the other hand, did not directly engage with developers to determine what level of density bonus should be given for what level of concession. As a result, some incentives Pittsburgh crafted are being underutilized by developers.[6] To craft its incentive structure, Tigard should meet with area developers to determine the rough cost of incorporating certain amenities into their development and what density bonus would be necessary in exchange for providing that amenity to justify the cost to the developer. Keep in mind, crafting an incentive structure is an art, not a science. Once the incentive structure has been crafted, publish the structure on your website so it is easily accessible outside of the code.

> *"It is balance/nexus between what people can reasonably do versus what you are asking for them to do."*
>
> **-Pittsburgh Rezoning Consultant**[7]

Be Prepared to Recalibrate Your Incentive Structure

In most of the incentive structures we engaged with, recalibration was a constant theme. When Arlington's Green Building Program started in 1999, no developers utilized the density bonus granted because the added requirement was not commensurate with the density bonus granted. In 2003, Arlington updated their program to match what the market would support so developers would participate in the program. In the years since then, Arlington continued to update their Green Building Program as the market changed and developers became more experienced with certain programs and kept pushing the program to the edge of what is currently possible. While Pittsburgh has yet to formally update their incentive structure, planners are preparing to do so in the near future. Since the Riverfront Zoning District was enacted in 2018, the city did a comprehensive update of their stormwater code and new development standards required on new developments qualify automatically for a height bonus or riparian buffer decrease. In the near future, Pittsburgh will update their incentive structure to make their stormwater management incentive requirements stricter.[8]

Additionally, Pittsburgh showed that some incentives are more popular than others. Developers along the Riverfront have gravitated towards incentives related to affordable housing, public art, and transit-oriented development. In turn, Pittsburgh has not seen many developments opting in for the energy efficiency incentives. For certain incentives that Tigard is most interested in seeing developers utilize, weigh those incentives higher than other incentives. Weighting certain amenities higher than others is also an excellent way to ensure that equity and sustainability focused incentives are utilized more commonly than others.

3.1.3 Offer a Menu of Options to Developers

Recommendation

Offering a menu of options for developers in an incentive structure is incredibly important. This should include tiers wherever possible for individual concessions from developers. Additionally, consider whether certain incentives should be given with a spatial context.

Justification

The cost of meeting an incentive structure and its value for a particular development varies greatly from project to project. Therefore offering a variety of incentive options, ideally with various levels of concession for each incentive, gives developers a flexible path to achieve greater density while minimizing their cost but maximizing the value to their project. Additionally, offering many incentive options hedges against the likely case that not all of the incentives are perfectly calibrated. (See Appendix C, D, and E, for examples of incentive structures from Pittsburgh, Arlington, and Alpharetta).

Lastly, consider if only certain incentives should be offered in certain areas of Tigard. For example, with pedestrian connectivity, designate that only parcels on officially designated trail routes are eligible for that incentive. This would prevent developers on parcels that are not destined to be a part of a future trail from building a piecemeal segment of a trail to cash in on a density bonus.

Table 16. Common Developer Incentives Across Case Studies

Jurisdiction	Stormwater Management	Energy Efficiency	Pedestrian Connectivity
Pittsburgh	10, 20, or 30 foot increase in height or reductions in riparian barrier	10, 20, or 30 foot increase in height or reductions in riparian barrier	10, 20, or 30 foot increase in height or reduction in riparian barrier
Arlington		Different amounts of FAR bonus for differing levels of LEED Certification	
Alpharetta			Waived impact fees for contributing to the Loop trail network
Portland	Grant program for Eco-Roofs from 2008 to 2012		

Data Source: LEHD 2018 All Jobs

3.2 Sample of Options Included in an Incentive Structure

Throughout this project, we have heard about two main categories of incentives that Tigard is interested in: (1) promoting greater connectivity with trails and (2) promoting energy efficiency. In this section, we provide more details and clarity on these two topics and two more incentives Tigard should also consider: (3) incentivizing shared parking and (4) encouraging property owners to offer short term leases in exchange for building improvement grants. This last incentive is a great way to promote equity and provide more opportunities for smaller, emerging businesses currently located in Tigard, often in residents' homes. To identify other possible incentive categories, we strongly encourage Tigard to conduct more community engagement (see Policy Recommendation 3.1.2), reference example incentive structures from the provided (see Appendix C, D, and E) and reference other possible incentives that we believe could be valuable but we did not have the time to fully explore (see Policy Recommendation 5.5).

Recommendations

3.2.1 Encourage new and redevelopment to adopt energy efficient construction techniques

3.2.2 Incentivize property owners to offer short term leases in exchange for building improvement grants

3.2.3 Incentivize shared parking agreement participation

3.2.4 Enhance pedestrian/bicycle connectivity of employment lands

3.2.1 Encourage New and Redevelopment to Adopt Energy Efficient Construction Techniques

Recommendation

For new construction and major renovations, Tigard should require a baseline of LEED-Silver and offer Floor Area Ratio (FAR) incentives for achieving LEED Gold and other more stringent certifications.

Because Tigard is more likely going to see retrofitting of existing buildings due to limited greenfield availability, Tigard should develop an alternative incentive structure for redevelopment. Energy efficient retrofits can reduce the operational costs, particularly in older buildings, which helps to attract tenants and gain a market edge.[9] As noted previously in Recommendation 3.1.1, additional Floor Area Ratio is the primary incentive tool, but the City of Tigard should consider alternate incentives, for example property tax abatements, to encourage developers to adopt green building practices not just in new construction, but especially in renovation projects.

Justification

LEED Gold, or the same rough equivalent in other third-party green building certification programs, should be the minimum standard required for achieving any FAR bonus for new construction/major renovations and for access to other incentives for retrofitting existing structures. Currently, LEED Silver and LEED-Certification are very easy for developers to achieve. Tigard should incentive going above baseline standards that are already becoming the norm in the building industry if offering concessions to developers. Tigard should also be certification agnostic, allowing appropriate bonuses for other certifications such as EarthCraft, Evergreen, PassiveHouse, Net Zero, and more. In line with Recommendation 3.1.2, Tigard should discuss with developers what the appropriate incentive is for each certification. Ultimately, Tigard should be certification-agnostic to offer flexibility to developers while ensuring energy efficiency standards are adopted.

Arlington proved that offering an increase in FAR in exchange for achieving LEED Certification, would increase the number of energy efficient buildings constructed. Arlington then penalized non-LEED construction by establishing a Green Building Fund and charging a fee to developers that did not commit to LEED Certification. In 2014, Arlington also received voter backing to issue a $663.1 million bond to address their aging infrastructure. Tigard should adopt this same structure to ensure that projects applying for bonuses complete the requirements, as similarly outlined in Recommendation 2.3.1.

As relayed in the case study, Pittsburgh is determined to reduce its carbon footprint 50% by 2030 in accordance with the Paris Climate Agreement. Accordingly, Pittsburgh has incentivized developers to build/renovate to LEED standards by adopting a building performance point system that adheres to LEED guidelines. Provisions in the performance points system encourage onsite energy generation, and

adaptive reuse, by incentivizing developers with variances in reduced setbacks and additional height bonuses. The performance points system incentivizes new construction and renovations in the Riverfront District to adopt green building techniques, but it has also been innovative in trying to increase efficiencies throughout its aging building stock. Based on conversations with the City of Pittsburgh[10], unfortunately very few developers renovating buildings have actually been taking advantage of incentives related onsite energy generation and consumption, as initially hoped. Tigard should consider weighting these more heavily to encourage developers to use these incentives. (See Pittsburgh example: Table 17.)

Table 17. Sample Bonus Goals and Points System

Taken from Pittsburgh's 2018 Riverfront Plan, where each point equates to ten (10) feet of additional building height or ten (10) feet of Riparian Buffer Zone reduction. Points are not transferable to other development projects.

Goal		Points
1. On-Site Energy Consumption - New Construction		
	1.a Site energy use intensity is at AIA 2030 Commitment average savings levels.	1
	1.b Site energy use intensity is at least 70% below national median.	2
	1.c Site energy use is 80% or more below national median.	3
2. On-Site Energy Consumption - Existing Buildings		
	2.a Site energy use intensity is at least 20% below national median.	1
	2.b Site energy use intensity is at least 35% below national median.	2
	2.c Site energy use is 50% or more below national median.	3
3. On-Site Energy Generation At least one (1) point from On-Site Energy Consumption required prior to using the On-Site Energy Generation points		
	3.a At least 25% of energy use is generated from on-site renewable sources.	1
	3.b At least 50% of energy use is generated from on-site renewable sources; or Connecting to distributed energy systems.	2
	3.c 75% or more of energy use is generated from on-site renewable sources.	3
4. Building Reuse		
	4.a Exterior design of new development is compatible with nearby structures more than 50 years old including the use of similar window and door sizes and materials, cladding materials, bays, cornices, and other primary structure	1
	4.b At least 75% of street facing building facades from structures more than 50 years old are restored and integrated into new development.	2
	4.c Existing building shell is restored and retained.	3
5. Neighborhood Ecology		
	5.a The top level of a parking structure is designed so that a minimum of 50% of the total area is shaded by solar panels	1
6. Urban Fabric		
	6.a Structured parking is designed to allow for conversion to other 2 (non-parking) uses.	2

Image Source: Pittsburgh's 2018 Riverfront Plan

Benchmarks

To establish benchmarks, require data be provided annually by commercial buildings detailing energy, water usage and waste generated as outlined in Recommendation 2.3.2. The data compiled over time allows comparisons of performance both between buildings of a similar size or era. This information not only helps the city determine if green policies are succeeding, but also enables owners and occupants to make strategic decisions that will save money and energy while improving comfort and health.

The City of Tigard could choose to measure performance standards based on intensity values (e.g., energy per square foot or GHG emissions per square foot) or absolute values (e.g., total energy use or total GHG emissions). Another energy metric might include site or source energy data. For example, in Pittsburgh existing construction is incentivized with performance points when site energy use intensity is at least 20% below national median. Ideally, the chosen metric is one that is easy to understand and implement by building owners.

To arrive at additional specific targets, Tigard should reflect on city goals and the results of their public engagement process to turn those into incentives. To facilitate this process, Tigard can apply to take advantage of the City Energy Project to help customize goals and develop policies specific to Tigard's needs.

3.2.2 Incentivize Property Owners to Offer Short Term Leases in Exchange for Building Improvement Grants.

Recommendation

In addition to allowing the maximum flexibility within the industrial development codes, the City of Tigard should provide incentives to encourage property owners to offer short term leases (3-6 month) to increase the affordability of industrial and commercial spaces. Typical industrial leases in Tigard are 3 to 5 years (with minimum 3% yearly rate increases). The City of Tigard should mirror Richardson's program by providing property owners with grant funding to make structural improvements in return for offering short term leases as specifically determined by the City of Tigard.

Justification

In addition to encouraging flexible space, Richardson city planners understood that the lease length could also be a barrier to small businesses. To address this issue, Richardson incentivizes property owners to offer short term leases by extending grants for building improvements as a way to defray additional costs incurred. Because Richardson's industrial lands are in the hands of only a small number of property owners, Richardson city planners have developed long term relationships with the developers in which communication about current market needs/demands is open and transparent.

A three year or longer lease can be cost prohibitive to start-up businesses. Reducing barriers to owners of small businesses is an equity enhancing tool that allows entrepreneurs access to operational space at all income levels.

Benchmarks

The City of Tigard should measure the success of this incentive program by monitoring the ratio of businesses relative to square footage along with vacancy rates of buildings who take advantage of the program.

3.2.3 Incentivize Shared Parking Agreement Participation

Recommendation

In addition to maintaining code language allowing shared parking agreements in lieu of constructing new parking (as mentioned in the Development Standards Policy Recommendation 2.2.1), the City of Tigard should incentivize utilization of shared parking agreements. Different scenarios call for different incentives and selecting the right incentive is critical to increasing participation in shared parking agreements. However, the City of Tigard could implement a number of various mechanisms. Below are incentives compiled from a few different sources:

Recommended shared parking incentives

- Educational programs designed to make the shared parking processes more transparent/ accessible (making the option more known).[11]
- Entitlement bonuses to dimensional standards such as FAR or increased flexibility in building coverage or height.[12]
- Facilitate a demonstration project.[13]
- Priority permit processing if shared parking agreements are utilized.[14]

Alternative shared parking incentives

- Publicly finance facilities[15]
- Public-private partnerships to develop and manage parking (parking management districts)[16]

Justification

Recommended

Shared parking agreements thrive on co-located and dissimilar land uses and work best in auto-oriented mixed-use commercial situations. These conditions engender a successful shared parking program because the uses must be varied enough to generate different peak hours of demand.[17] Yet, as outlined in Recommendation 2.2.2, developers face barriers at many steps in the process. As the City of Tigard consolidates its zoning designations, there is a real opportunity to utilize incentives to increase adoption of the programs. Educational programs are good at informing developers how to meet code requirements in ways that perhaps they had not thought of. Code is dense and specific alternative ways to meet requirements can be easily passed over. Facilitation of a pilot program can build on this knowledge and demonstrate to business owners and developers that parking requirements can be met alternatively without harming small businesses. Entitlement bonuses such as FAR, or other dimensional bonuses can help sweeten the deal for taking a step out of standard practices. However, when bonuses are allowed, careful attention must be paid to balancing the parking requirements with the increased parking needs of the more dense building. Priority permit processing is another way for municipalities to sweeten the deal and cut costs for developers that may be incurring additional costs for doing something differently than industry standard.

Alternative

Alternative incentives are recommended not to be implemented by the City of Tigard with the MADE project. This is due to a few factors. Parking management districts and publicly funded parking facilities work better for incentivising shared parking in areas that are compact, mixed-use, pedestrian oriented, and where parking is in short supply.[18] Tigard's downtown area might be a good place to consider a further look at implementing a parking management district but falls outside of the MADE scope.

Mitigating Concerns

As mentioned in the Development Standards Policy Recommendation 2.2.1, there are a myriad of reasons why shared parking agreements are underutilized as a means to conform to the city parking standards. City staff identified a lack of technical expertise in crafting incentives for shared parking. Talking with developers and business owners is a great way to workshop recommended incentives and narrow in on specific allotments for participation in shared parking agreements.

3.2.4 Enhance Pedestrian/Bicycle Connectivity of Employment Lands

Improving the pedestrian/bicycle (aka 'active transportation') network throughout the industrial and commercial districts and linking neighborhoods together allows accessibility for those who do not, or prefer not to, drive a car (in turn reducing carbon emissions), promotes a healthy lifestyle by encouraging outdoor recreation, and knits a community together by providing opportunities for social engagement. High quality urban trails through natural areas are a local amenity that will attract businesses, employees and tourists.

Recommendations:

- 3.2.4.1 Connect industrial districts to commercial and residential neighborhoods by adding active transportation routes to link these areas.
- 3.2.4.2 Close the loop.
- 3.2.4.3 Add trails through natural areas to connect districts where the existing street network is disjointed.
- 3.2.4.4 Increase pedestrian and bicycle safety with buffers from vehicular traffic, and install rapid flashing beacons at intersections.

Benchmarks

Active transportation networks including multi-use trails and additional bike lanes will only be utilized if they are considered safe. To appeal to a wider cross-section of bicycle users, including parents, children, and the alternately abled, trails and bike lanes must be protected from vehicular traffic with additional signals and buffered/protected bike lanes.

The City of Tigard should monitor and measure changes in mode share to determine whether these safety enhancing measures have decreased car dependency and increased walking and bicycle ridership.

Numerous grants, including U.S. Department of Transportation's Build Project, Federal Recreational Trails Program Grants, and PeopleForBikes Community Grants exist to help cities develop and expand their trail systems. The City of Tigard should take advantage of these grants as needed to fund a robust trail network that includes environmentally enhancing elements such as solar lighting, retention ponds, and permeable pavement to help offset and filter the storm water run-off in industrial neighborhoods.

3.2.4.1 Connect Industrial Districts to Commercial and Residential Neighborhoods by Adding Active Transportation Routes

Recommendation

The City of Tigard should develop a plan for extending the existing multi-use trail network to industrial neighborhoods to provide connectivity with downtown and various residential neighborhoods. The City of Tigard must first complete a map of the envisioned trail network with established standards, then share it with developers and offer FAR incentives for completing segments along the route to get portions of the trail completed as parcels are developed (or redeveloped).

Justification

By expanding active transportation networks, cities can improve social equity by dramatically enhancing the quality of life for underrepresented populations. Low-income communities, people of color and older adults, who typically rely more heavily on public transportation and non-motorized forms of travel, disproportionately represent the number of people killed while walking.[19] Additionally, as discussed in Recommendation 2.2, low-income communities and people of color are less likely to own a car for their primary mode of transportation.

Analyses have shown that cities who implement stronger pedestrian and bicycle networks, including trails, improve the liveability of neighborhoods. Trail investment has been proven to have direct medical benefits.[20] As shown in Table 17, these benefits greatly surpass the costs. Even in the most sensitive worst-case scenario (high equipment cost), the direct medical benefit outweighs the cost by more than 65%.

The case studies have also shown that enhanced pedestrian infrastructure has contributed to improved economies by increasing the desirability of the connected neighborhoods and potentially reducing vacancy rates for office and industrial space in these areas. However, this added amenity could have a capitalization effect - kickstarting a form of environmental gentrification, making the area more desirable, thereby increasing rents and becoming less affordable.

Table 18. Cost-Benefit Ratios of Extreme Cases of Physical Activity Using Bike/Pedestrian Trails in 1998 (U.S. dollars)

	Worst-Case Scenarios		Best-Case Scenarios	
Variable	*Value*	*Cost Benefit Ratio*	*Value*	*Cost Benefit Ratio*
Cost of trail construction and maintenance	$0.78/use	2.08	$0.20/use	3.63
Equipment and travel cost	$300/year	1.65	$0/year	13.4
Direct health benefit	$365/year	1.9	$763/year	3.97
Life of trail	10 years	2.22	50 years	3.14
Number of trail users	50% below actual number	3.39	50% above actual number	3.63

Source: Health Promotion Practice. April 2005.

Alpharetta was able to fund the Alpha Loop trails through two different strategies. One, the city established a tax allocation district to help channel a portion of future tax dollars into reviving the area - specifically through the addition of parks and trailways[21]; the second effort was to encourage property owners adjacent to trail routes and pedestrian pathways to provide easements and build out sections of trail (according to standards provided by the city) in lieu of SDCs or impact fees. By privatizing construction of active transportation networks, Alpharetta not only achieved "buy-in" from developers, but also completed segments at a much lower cost and often received additional amenities from developers looking to attract businesses and employees.

In Tigard, natural barriers such as Fanno Creek and man-made barriers such as railroad tracks make pedestrian and bicycle access into employment lands a challenge. Residents may have to walk or bicycle miles out of their way to get to their destination due to lack of connectivity. Tigard should prioritize crossings of these barriers as a way to enhance industrial-commercial-residential connectivity. Once Tigard develops a preferred alignment for the trail, it can begin offering construction of the trail as an incentive.

3.2.4.2 Close the Loop

Recommendation

As Tigard noted in its Green Urban Network document, the City of Tigard should take advantage of existing trails like the Fanno Creek Trail and extend these trails through downtown.[22] But trails only through downtown miss connection opportunities citywide and do not create enough of a network to encourage walking or cycling commutes as options instead of traveling by car or bus. The City of Tigard should incorporate the industrial neighborhoods into the trail network and, importantly, complete a full loop through the city.

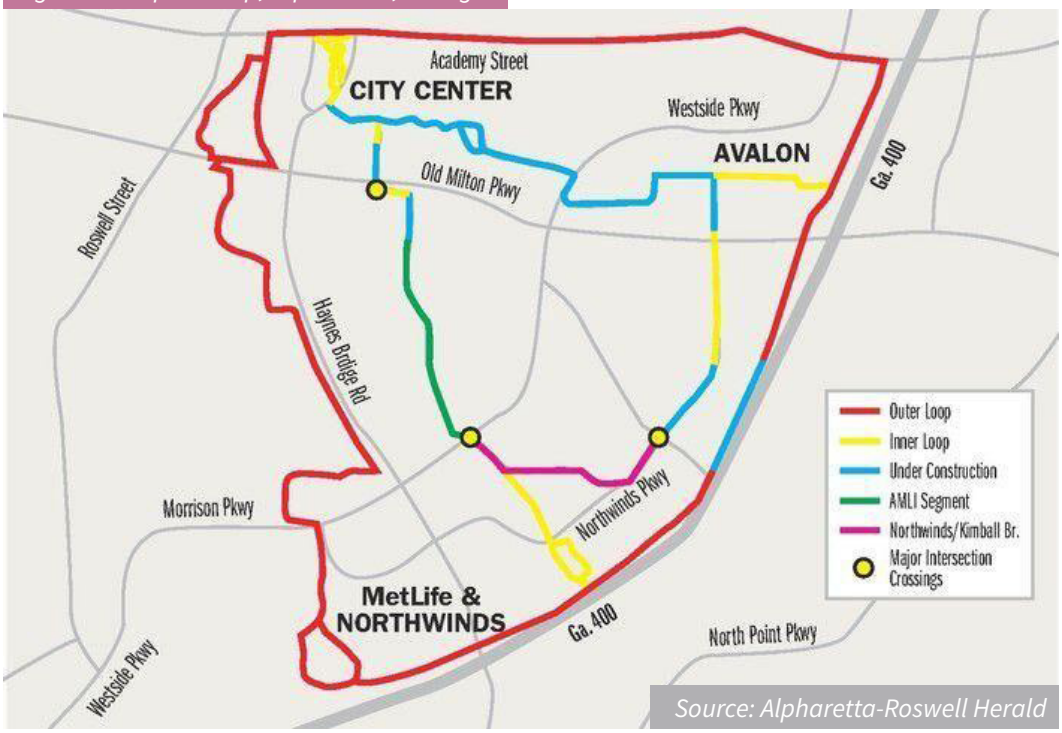
Justification

By linking the trail in a loop, users can join the trail at any point to get from A to B. Preliminary research indicates that walkers prefer a circular trail for wayfinding and social engagement.[23]

Alpharetta's Alpha Loop consists of two circular trails and links 3 distinct commercial districts; it was inspired by Atlanta's successful BeltLine network. Soon to be expanded to yet another large scale mixed use development, the Alpha Loop has proven to be a desirable amenity attracting high end corporate investment.[24]

Urban multi-use trails, especially those forming closed circles, are attractive not only to residents but can be marketed as a tourist attraction. "Investing in bicycle and pedestrian trails create(s) a community that draws people in – therefore drawing in new businesses, events, development and a growing tax base."[25]

Figure 47. Alpha Loop, Alpharetta, Georgia



Source: Alpharetta-Roswell Herald

3.2.4.3 Add Trails Through Natural Areas to Connect Districts Where the Existing Street Network is Disjointed

Recommendation

The City of Tigard should proactively connect residential, commercial and industrial neighborhoods currently isolated by freeways, natural barriers, and undeveloped space.

Justification

The City of Tigard's Fanno Creek is a public amenity that presents both a challenge and an opportunity. The industrial areas are physically blocked from this natural area by a railroad line that follows the Fanno Creek trail along its east edge. By providing safe ways to cross the tracks and extending the trail through some of the industrial areas, Tigard could both provide car-free ways to commute to work and green up an area covered by pavement.

Portland's Eastbank Esplanade links the Central Eastside Industrial District to downtown by a multi-use trail that follows the Willamette River and utilizes buffered bridge crossings to separate pedestrians and cyclists from traffic. Prior to the Eastbank Esplanade, the Willamette River presented a barrier to pedestrians and cyclists trying to access either side. By linking the Waterfront and the Eastbank trails to the bridges, a bike commuter can now get to the CEID from the Pearl District in as few as 10 minutes (1.5 miles). The bike ride promotes health and eliminates the cost and time required for parking a vehicle.

Also facing natural features that formed barriers to transportation, Pittsburgh now links its industrial districts via 15 different trail networks throughout the city. The Three Rivers Heritage Trail is a multi-use riverfront trail system with segments on both banks of Pittsburgh's three rivers providing access to city residential neighborhoods, local attractions, and business districts.

3.2.4.4 Increase Pedestrian and Bicycle Safety

Expanding the network of trails and bike lanes is only useful to improve health and reduce carbon emissions if people get out of their cars and use them. Increasing pedestrian and bicycle protections along these trails, especially where the trails intersect or follow highly trafficked corridors will minimize safety concerns, both real and perceived. Tigard should incentivize developers to improve active transportation infrastructure that adjoins their property, and where insufficient land prevents the creation of active transportation infrastructure, Tigard should prioritize easements to acquire the land for providing such infrastructure.

The City of Tigard should implement these recommendations through incentivized easements provided by developers within new and redeveloped employment areas. By utilizing land, in exchange for additional FAR, for improved bike and pedestrian crossings and buffered/protected bike lanes, developers help reduce car dependency and ultimately, need for additional parking.

Qualifying Improvements

- Installation of Rectangular Rapid Flashing Beacons (RRFBs)
- Installation of protected and buffered bike lanes
- Installation of bus stop shelters for transit riders

Rectangular Rapid Flashing Beacons (RRFBs) increase the visibility of pedestrians and cyclists attempting to cross busy streets. RRFBs are a set of high-intensity yellow lights, mounted below a pedestrian warning sign, adjacent to a crosswalk. When a person on foot approaches the crosswalk, he or she presses an accessible button that activates multiple sets of yellow flashing lights and quickly signals to drivers that they must yield to the crossing pedestrian. RRFBs help increase the visibility of pedestrians at existing crosswalks.

The City of Tigard should incentivize developers to increase the number of Rectangular Rapid Flashing Beacons (RRFBs), especially along the Fanno Creek Trail where it abuts the industrial districts and along SW 72nd Avenue. Currently only four Tigard crosswalks have these beacons, with only one located in an industrial area.

As a complete streets leader, Arlington installed its first two RRFBs over ten years ago to pilot this new innovative technology. In May 2020, the Federal Highway Administration recognized Arlington County for its efforts to deploy RRFBs to improve pedestrian safety.

Buffered bike lanes, which provide designated space separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane, and protected bike lanes, which have a physical barrier, protect cyclists from vehicular traffic. These bike lane features encourage bicycling by contributing to the safety of their users.

The City of Tigard should offer FAR incentives for developers who install buffered and protected lanes along their street façade, or prioritize the easement of land from developments for the City to install these street features. Because SW 72nd Avenue is notorious for excessive traffic speed, we recommend this be a priority route for offering the incentive.

In April of 2019, the City of Tigard conducted a study of buffered vs protected bike lanes along SW 72nd Avenue. These two options outlined the advantages and disadvantages of each scenario. A few of the known advantages of both buffered and protected bike lanes include:

- Greater “shy distance”, between the bicyclists and motor vehicles to prevent fixed objects like rear view mirrors from extending into the lane and causing injury to cyclists.
- Visible cue that bicycles are expected on the roadway.
- Space for bicyclists to pass another bicyclist without encroaching into the adjacent motor vehicle travel lane.

In 2009, as part of Richardson’s Comprehensive Plan, the city began adding bike lanes as a high-profile initiative to calm traffic and provide a safe bicycle environment. After a decade of use, the city recognized that providing physical separation in the buffer between the vehicle travel lane and the bike lane increased safety and comfort for cyclists. As a result, the City of Richardson began installing protected bike lanes as of 2020.

Enhanced bus shelters improve the experience for transit riders. The City of Tigard should create an incentive for developers to install bus stop shelters where TriMet bus stops exist. These public-private partnerships can improve the experience of transit riders, who are more likely to be from communities of color or low-income communities.

Bus shelters offer a reprieve from the elements, be they the rain or sun. While studies show that bus frequency is a bigger driver of mode adoption than any other factor, it is still important to offer safe and comfortable features during all points in a transit journey. The presence of bus shelters not only adds comfort and protection but communicates that transit is not a forgotten transportation mode in employment areas. Further, as MADE succeeds in increasing worker density, it increases the potential for improved public transportation options, making bus shelters even more valuable to users. The very bonus of FAR for creating a bus shelter creates the conditions for better transit service.

Citations

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4.1 Equitable Public Engagement around New Developments

Summary

Protecting community control is critical to equity, particularly when the development will increase pollution or have an otherwise large impact on an area. However, many structures for facilitating public involvement disproportionately lift up the voices of those that already hold power in our society. Public involvement must provide an opportunity for self-determination and be accessible to everyone in the community.

Justification

Tigard currently requires public involvement in two types of permitting processes relevant to the MADE employment lands. For both these types, property owners within 500 feet of a development are notified of either the development application or development hearing. Anyone in the community is then able to comment on the development, though comments are only considered if relevant to the zoning criteria.

Many structures for public involvement disproportionately advance voices of the privileged. For example, an audit of the City of Portland's neighborhood associations found that the associations are not representative of their communities, both in racial demographics and housing status. In 2016, Seattle attempted to cut ties with its Neighborhood Councils as the city no longer viewed them as representative of their neighborhood. Efforts to mitigate disparate participation through technology such as streamed meetings have not yet succeeded; new research shows that Zoom meetings were the same as pre-pandemic: unrepresentative.

Impacts of environmental racism manifest as communities of color and low-income communities experience increased exposure to pollution and hazards, contributing to the disparate health outcomes for these communities. For example, air pollution from transportation infrastructure has been shown to

Figure 48. Demographics of Participation in Zoom City Council Meetings

PARTICIPATION IN ZOOM MEETINGS: MARCH-SEPTEMBER 2020

(EINSTEIN, GLICK, GODINEZ PUIG, AND PALMER 2021)

	% of Commenters	% of Voters	Difference
Women	46.9%	52.8%	-6
Democrats	32.7%	30.9%	+1.8
White	82.5%	69.7%	+12.8
Age>50	73%	50.7%	+22.3
Homeowners	78.3%	53%	+25.3

Research shows Zoom meetings perpetuate power imbalances in public participation processes.

Image Source: Einstein, Glick, Godinez Puig, and Palmer, 2021

increase asthma rates and lower birth weights in the adjacent communities.[4] As demonstrated in our Existing Conditions section, areas adjacent to Tigard's employment lands have higher concentrations of communities of color and low-income communities compared to the city-wide average. However, addressing environmental racism is not as simple as banning certain uses. Developments can provide jobs and economic opportunity and banning or evicting an industry does not necessarily create new jobs and can even damage a city's economic base. Thus, it is critical that the affected communities have a say in the presence of these industries to weigh the positives and negatives from these developments for themselves.

The use of some form of engagement process offers a way for impacted communities to participate in the process. Engagement ranges from an "inform" model where communities are made aware of a development to community-control in which communities exercise their organized power to decide what happens. While community-control is the ideal, the difficulty in developing that system and doing so in an equitable way hinders its application such that few cities of any significant size are able to fully implement that form of engagement. Instead, cities tend to rely on intermediate systems, with delegates or representatives making decisions.

The Participation Ladder demonstrates the spectrum of engagement. Tigard should strive to implement an equitable version of Citizen Control.

Figure 49. Arnstein's Ladder of Citizen Participation

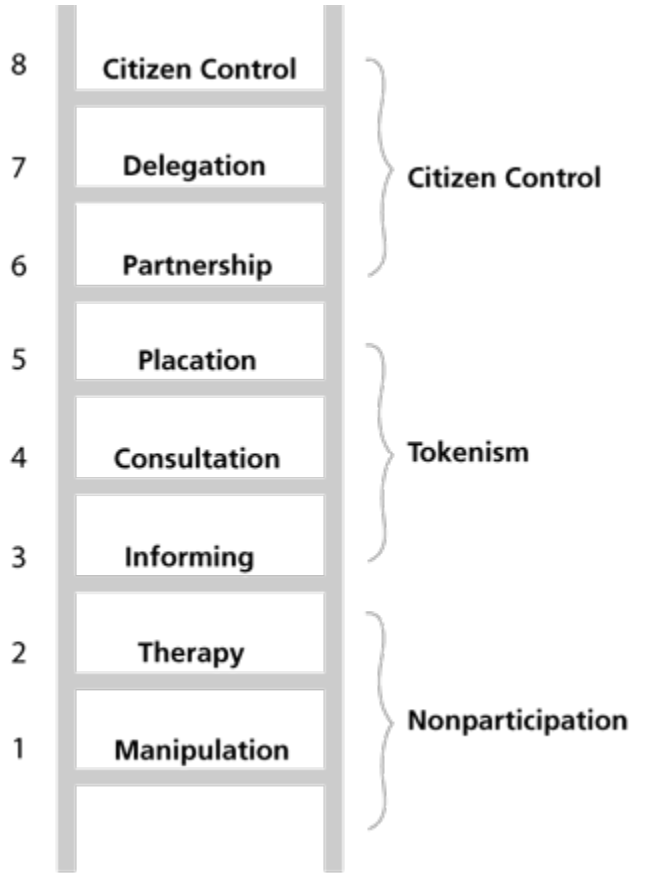

Image Source: Arnstein, 1969

The importance of engagement by historically marginalized communities is well-summed up by this APA guidance on environmental justice. ""The right of communities to say "no" to unwanted, noxious land uses continues to be a catalyst for environmental justice struggles across the globe (Temper et al 2015). One of the most direct ways to mitigate these uses is to institute an outright prohibition or ban on specific land uses or industries deemed harmful to public health and the environment. Objection to locally unwanted land uses (LULUs) was initially derided by planners and government as a parochial expression of "not in my backyard" (NIMBY) sentiments by residents seeking to selfishly guard their property values over that of the public interest. But LULUs take on a different meaning in the context of EJ communities that have been historically sacrificed for development that benefits whiter, wealthier communities at their expense. In EJ communities, the right to resist LULUs exerts pressure on the racist formations underlying industrial development and the profit-seeking goals of industries that benefit at the expense of EJ communities (Lake 1993).

Benchmark

Measure the demographics of public participants and compare against Tigard demographics to identify gaps between community members being engaged.

4.1.1 Conduct a Review of Participation in Type II and Type III Processes for Disparities Among Racial, Gender, and other Identity Groups

There is no reason to believe Tigard's participatory processes are more representative than similar processes in other regional cities. Still, policymaking requires evidence before making changes. For that reason, Tigard should conduct a demographic analysis of general public participants in the Type II and Type III hearings and document participation disparities from Tigard's population. Further, it should compare the participant demographics more closely to the demographics of the affected areas, such as within ¼ to ½ mile of the development. Evidence shows that, in the employment lands context, these adjacent communities are more diverse than Tigard as a whole.

Once the analysis is complete, Tigard should engage public involvement experts to re-imagine its participatory processes to be more equitable. For example, Pittsburgh created a Planning Commission as its formal body for involving public participation. This may prove to be a more equitable solution for Tigard, but additional research and expertise is required to validate that.

4.1.2 Update The Base Zone and Development Standard Code to Clarify Required Public Involvement and Hearing Processes

Generally, Tigard's zoning code is clear and accessible for readers, according to interviews with business owners. However, a relatively small format change - requiring no change in content or processes - would further improve the code. For this change, Tigard should update the Division 18.100 BASE ZONES code to better spell out the required hearing and approval process.

In the City of Portland Base Zone code, the City articulates the "Neighborhood Contact" process relevant to the entire zone (see Appendix B). While the City has levels of Neighborhood Contacts (I, II, and III, which also overlap with similar Type I, II, and III approvals), the Base Zones articulate which Neighborhood Contact level is required. As a reader, this makes clear what the requirements will be.

In contrast, for the City of Tigard Zoning Code, the Development Standards for Commercial and Industrial simply state that a "site development review application" is required without additional information. The reader must then track that down in a different section - there is missing information regarding which section explains the site development review application. In that process, a table informs you that a Site Development Review requires either a Type I or Type II approval. However, whether a development would fall under Type I or Type II review is vague. Additionally, in speaking with Tigard staff, many of the projects they are anticipating would require a Type III review, either because they are a conditional use or for some other reason. A business owner would learn which type they must participate in during a pre-application meeting.

From an equity perspective, the muddy nature of this process may be difficult for small businesses. Complex processes benefit those with the resources and expertise to navigate the process. Being more specific in the base zones and development standards as to the hearing process and public involvement process lowers the barriers to participation for small businesses.

4.2 - Conduct a Public Involvement Process to Define Equity and Sustainability for Tigard

A community-created process to define equity and sustainability will help guide the City's planners and policymakers while increasing the legitimacy of the MADE recommendations.

- Include in the MADE engagement plan a space for the community to define equity and sustainability, specifically for MADE but also for the city as a whole
- Clearly define goals and ways for Tigard to measure its progress toward equitable and sustainable outcomes

Justification

In examination of employment land rezonings in jurisdictions across the country, Attune Planning did not find another example of a city that centered equity and sustainability in the process. Some captured aspects of one or the other, leaving Tigard the first to be able to rezone its employment lands with an emphasis on both equity and sustainability. Yet there are precedents around equitable and sustainable planning more broadly. While Tigard's leaders have discussed the terms equity and sustainability and committed to aspects of them, a broader public process should be undertaken.

Planning has a history of being done by bureaucrats deciding what is best for a city. With planning jobs historically dominated by white men, what is best for the city often became what is best for white men. As the profession grapples with this and the profession diversifies, so too has the emphasis on having planners implement the wishes of the community. Determining the community values and goals requires working with the community to develop those goals.

Attune Planning conducted a review of definitions of sustainability and equity from precedent examples and literature and offered working definitions for the purpose of developing this report. But among our recommendations is that Tigard conduct a thorough process so that Tigard's community members define equity and sustainability. We hope that our working definitions can be a launching point.

Tigard is poised to develop these definitions, yet is going through a transition period with its governance as it wrestles with these complex and politically-charged topics. City leaders have articulated sustainability and equity as values, yet these reflect their views as individual leaders and not on behalf of the city. Developing these as a city will provide a stronger road map for city employees and residents.

As Tigard undertakes an engagement process connected to the MADE project, it can provide an avenue to begin the discernment process.

Tigard should:

- Incorporate into its MADE engagement plan a process for the community to define equity and sustainability in regard to MADE.
- In the next major planning process, such as for the next Tigard Comprehensive Plan, define equity and sustainability and related goals for the city as a whole.

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Miscellaneous/Under-Explored

Given the limited time available for in-depth research and engagement, several topics were left under-explored. These topics are included here. We encourage Tigard to explore these topics and recommendations through their work with the consultants brought on board to assist with the remainder of Tigard MADE.

- 5.1 Prohibit Self-Service Storage Centers
- 5.2 Allow more flexibility for employment uses in residential areas
- 5.3 Bioswales/Stormwater
- 5.4 Underexplored Aspect of On-Site Solar Generations
- 5.5 Additional Options to Explore for Inclusion in Incentive Structure

5.1 Prohibit Self-Service Storage Centers

Tigard should make self-service storage centers a prohibited use in all employment lands. Self-Service Storage Centers require a large amount of space without providing many jobs in exchange. (Alternative: allow for these only to be sited in areas like the immediate vicinity of I-5.)

5.2 Allow More flexibility for Employment Uses in Residential Areas

Through our interviews with owners of newly registered Tigard businesses, we discovered that several operated their businesses out of their respective homes at some point during the last year. For some, this was due to the pandemic, but for others it was simply because home was a viable, affordable place to start their business. In general, there seemed to be considerable fluidity among very small businesses between conducting business from a private residence and conducting it out of a formal commercial space. Owners moved back and forth. This finding suggests an important shortcoming of Attune Planning's work and perhaps in the scope of Tigard MADE: neither has attended to the regulatory regime or public-support needed by very small businesses operating in Tigard's residential areas. This is problematic because starting a business from home is perhaps the lowest barrier way to start a business, thus the path available to those with the least income and wealth. Figuring out a way to better support these businesses is likely highly equity enhancing.

One technical services business owner provided a strong example of the sort of regulatory reform that the City of Tigard should examine in order to support its very small businesses operating in residential areas. That business owner reported that, upon registering their business at a private residence, they had to sign an agreement indicating that no employees of the business would ever visit that residence for any purpose. There are obvious reasons why such a requirement might be worthwhile from the city's perspective. However, in the age of the COVID-19 pandemic, residential areas seem more mixed-use than in recent memory. Now is a perfect time to examine whether very small businesses could be better supported in Tigard when they start in private residences. It would also be beneficial to examine how supporting more small businesses in residential areas could lead to more livable, functional neighborhoods. This topic could also include the exploration of legalizing accessory commercial units, a sibling to the accessory dwelling unit.

5.3 Bioswales/Stormwater

Nearly all of our case studies tangentially touched on the topic of stormwater management. However, none of the rezoning efforts studied had a distinct focus on stormwater management and we did not have enough time to explore this issue deeper. Tigard already has a stormwater master plan, created in 2019. However, we did not have adequate time to explore this topic within our engagement and none of the case studies explicitly centered this topic. However, we believe that Tigard should incorporate stormwater management incentives for developers. Ideally, Tigard should work towards coming up with a formula that recommends for a certain amount of square footage of impervious surfaces on a site that an appropriate sized bioswale must be included to collect stormwater runoff.

5.4 Under-explored Aspect of On-Site Solar Generation

Attune Planning did not include a policy recommendation to require or incentivize on-site solar generation as evidence suggests that federal and state incentive programs have been sufficient motivation to add rooftop solar panels and Portland's experience shows that these requirements have been challenging to implement and enforce due to technical challenges. Another preliminary investigation shows that significant power grid upgrades may need to be completed first prior to instituting this policy. As noted by OPB in 2020, "The grid is at capacity for solar power in parts of Oregon."[1]

5.5 Additional Options to Explore for Inclusion in Incentive Structure

While Policy Recommendation 3.2 provides for several examples of what to include in an incentive structure, there are several other topics that we think could be useful to include which we lacked the time necessary to thoroughly vet. We encourage Tigard to further explore these topics for consideration.

- Pollution Scrubbers beyond DEQ requirements
- Secure Bike Parking
- Eco-Roofs/Green roofs (if cool roof is the base code)
- Professional Programs that link up with Portland Community College and other technical schools
- Inclusionary Zoning for Residential and Commercial Uses

Citations

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Section 5

APPENDICES

Image Sources: Explore Downtown Tigard

ATTUNE PLANNING

Appendix A - Engagement

Summary

Attune Planning interviewed 15 professionals (planners, consultants, and developers) involved in the five precedents studied for this report. We also interviewed 7 owners of businesses newly registered in Tigard. We found that:

- The planning profession has not substantially explored the ways in which equity and sustainability are involved in and feasibly advanced by zoning and development code in employment areas.
- Zoning and development standards often result from consultation and negotiation with local developers and real-estate users rather than deriving from real-estate financial analysis.
- Planners grapple with a tension between allowing by-right development and using restrictive regulations as a pretext for forcing concessions from developers.
- Many very small businesses start at a private residence or periodically move between a private residence and formal commercial space. Tigard's rules and regulations regarding employment uses in residential areas is a key area for future exploration as Tigard moves to support its small businesses.
- Price is fundamental to business owners' decisions about where to locate, validating this report's focus on affordability.

Purpose

Attune Planning conducted interviews with planners, real-estate developers, and business owners regarding our five selected precedents: Portland, Pittsburgh, Richardson, Alpharetta, and Arlington. These interviews helped us better understand the context, content, goals, and outcomes of rezoning precedents in order to glean insights relevant to Tigard's own rezoning.

Goals and Objectives

the following are goals one through three of the engagement for Attune Planning

Goal 1: Develop a deeper understanding of employment-land rezoning precedents.

Attune Planning reviewed new articles, academic literature, and planning documents to identify, understand, and extract useful information from precedents relevant to Tigard MADE. Engagement built on that research, deepening our understanding of precedents by allowing us to learn directly from the practitioners and constituents involved.

- Objective 1: Identify zoning frameworks, rules, thresholds, and benchmarks used in other rezoning efforts aimed at enhancing equity and sustainability. (For example, a zoning framework could be regulating development based on form rather than use. A rule could be requiring a minimum of 0.5 parking spaces per employee. A threshold could be distinguishing between different levels of distribution-center impacts based on size. A benchmark could be measuring project success based on the number and percentage of living-wage jobs in the area).
- Objective 2: Understand applicability of each precedent to Tigard as well as the applicability of frameworks, rules, thresholds, and benchmarks from the precedent.
- Objective 3: Understand the outcomes other places experienced after implementing frameworks, rules, thresholds, and benchmarks .
- Objective 4: Understand ways in which the rezoning precedent could have been improved.

Goal 2: Generate leads.

Interviewing professionals provides an opportunity to generate additional leads for engagement and research.

- Objective 1: Use engagement to find new, relevant leads for the research team.
- Objective 2: Use “snowball” recruitment to parlay one interview into additional interviews with new, relevant leads.

Goal 3: Communicate key messages to the Tigard community.

Attune Planning conducted interviews with Tigard’s development and business community. Those interviews offered opportunities to pass along key messages the City of Tigard wishes to convey to constituents. The City of Tigard provided input on what those key messages should be, if there are any at all. The City of Tigard also provided input on leads it feels would be appropriate or strategic for interviews.

Approach

Attune Planning aimed to complete at least 15 interviews, with hopes of completing even more, contingent on time and interviewee willingness. Attune Planning compiled interview notes and delivered them internally to the City of Tigard.

Interview Tools

- Question list: Each interview followed a list of questions tailored to each specific interviewee and context. Interviews departed from those questions to explore relevant and promising details.
- Modes: Zoom and phone
- A notetaker listened in and took notes, as available

Interviews with professionals involved with each precedent

Attune Planning discovered leads while reviewing planning documentation related to each case. We reached out to leads with "cold" emails (i.e. emails to new contacts sent out of the blue). Those emails explained who the research team is, why we thought the professional's perspective would help us, then asked and arranged for interviews.

Attune Planning also used snowball recruitment to generate additional leads. This entailed asking interviewees if they had contacts within the development, business, or planning communities that they could connect us with to learn more about their precedent (or another one entirely). This method routinely generated second and third leads and yielded stronger response rates than cold emails.

Interviews with Tigard business owners

The City of Tigard gave Attune Planning three lists containing names and contact information for businesses newly registered in Tigard—one for each month from March through May 2021. During May, Attune Planning called businesses from these lists to request 10 minute interviews. These interviews inquired as to why the businesses located in Tigard, what attributes they required in a business space, and how their interactions with the City of Tigard went while opening their businesses. The purpose of these interviews was to understand the space and regulatory needs of businesses that had chosen to locate in Tigard.

Responses

Table 1 lists the professionals Attune Planning contacted for interviews and who completed those interviews. In addition to those listed below, a member of the Attune Planning team had a chance to interview two unlisted Pacific Northwest industrial developers for a related but separate project, informally adding developer perspective to inform the team's understanding and analysis.

Note: *The contents of this report do not represent the specific opinions or recommendations of any individuals listed here. The report's content and recommendations may solely be attributed to Attune Planning.*

Table 2. Number of New Tigard Businesses Contacted and Interviewed

Type of Business	Number Contacted	Number Interviewed
Wholesale/ Industrial/ Production	7	2
Construction/ Landscaping	3	2
Daycare	2	1
Retail/Personal Services	9	1
Professional/ Technical Services	2	1
Total	23	7

Table 2 provides anonymized data on the Tigard businesses we contacted for interviews and the types of businesses we ultimately were able to interview.

Table 1. List of Professionals Contacted for Interviews

Name	Role, Organization	Perspective	Precedent	Interviewed
Dr. Jamaal Green	Portland State University Instructor; Research Analyst at the Oregon Department of Human Services	Academic	NA	Yes
Robin Scholetzky	Portland State University Instructor, Principal at UrbanLens Planning	Academic	NA	Yes
Dr. Marisa Zapata	Associate Professor, Portland State University	Academic	NA	No
Tony Jordan	President, Parking Reform Network	Advocacy	NA	Yes
Will Macht	Associate Director of the Portland State University Center for Real Estate; President, Macht & Company	Academic	NA	No
Dr. Peter Finley Fry	Co-Chair, Land Use and Development Committee for the Portland Central Eastside Industrial Council	Planner	Portland	Yes
Troy Doss	Senior Planner, Portland Bureau of Planning and Sustainability	Planner	Portland	Yes
Brad Malsin	Principal, Beam Development	Developer	Portland	No
Jonathan Malsin	Principal, Beam Development	Developer	Portland	No
Kimberly Sutton	Small Business Development Program Manager, Port of Portland	Unknown	Portland	No
Teresa Carr	Commercial Properties Director, Port of Portland	Unknown	Portland	No
Ken Anderton	Senior Manager of Business Development and Properties, Port of Portland	Developer, User	Portland	Yes
Tamara Kennedy	Commercial Strategy Manager, Port of Portland	Planner, User	Portland	Yes
Corey Layman	Zoning Administrator, City of Pittsburgh	Planner	Pittsburgh	No
Andrea Lavin-Kossis	Riverfront Development Coordinator, City of Pittsburgh	Planner	Pittsburgh	Yes
Matt Galluzo	President and CEO, Riverlife	Advocacy	Pittsburgh	No
--	Consultant on Riverfront Rezone	Planner, User	Pittsburgh	Yes
Brandon Mendoza	Executive Director, NAIOP Pittsburgh	Developer, User	Pittsburgh	No
Doug McDonald	Strategic Initiatives Manager, City of Richardson	Planner	Richardson	Yes
Pat Hanahan	Property Manager, Fobere Commercial	Developer, User	Richardson	Yes
Kathi Cook	Director of Community Development, City of Alpharetta	Planner	Alpharetta	Yes
Ben Kern	Planner, City of Alpharetta	Planner	Alpharetta	Yes
Joan Kelsch	Green Building Programs Manager	Planner	Arlington	Yes
Matthew Pfeiffer	Site Plan Review Supervisor	Planner	Arlington	Yes
Total				15 of 24

Takeaways

Professional interviews

Learnings from the interviews conducted with professionals are threaded throughout this report's discussion of the precedents and policy recommendations. Given the large differences in the context and content of the precedents, only a few key themes were common across interviews:

- The planning profession has not substantially or systematically explored the ways in which equity and sustainability are involved in and feasibly advanced by zoning and development code in employment areas.
- **Zoning and development standards often result from consultation and negotiation with local developers and real-estate users and adapt to local economic or geographic context.** Real-estate financial analysis appears deemphasized amongst planners when calibrating regulations and incentive programs. Very broadly speaking, Attune Planning questions the extent to which the financial value of specific regulations or incentives can be accurately approximated, given the uniqueness of real-estate products, the imperfect information and idiosyncrasies that characterize real-estate development and investment, the unspecific nature of some regulations and requirements, and the variable creativity, motivations, business models, and skill sets within the development community.
- **Planners grapple with a tension between allowing by-right development and using restrictive regulations as pretext for forcing concessions from developers.** In other words, planners seeking equity- and sustainability-enhancing outcomes help formulate and implement the public sector's approach to development, which lies on a spectrum between a) facilitating development and relying on the market to deliver desired outcomes, and b) obstructing development and relying on negotiation with developers over entitlements to secure desired outcomes.

Business-owner interviews

Small businesses often start at or rely on home space

Of the seven business owners we interviewed, four had operated out of their homes during the last year. In general, there seemed to be considerable fluidity among very small businesses between conducting business from a private residence and conducting it out of a formal commercial space. In other words, businesses moved back and forth between the two options. One personal services business had stopped renting a commercial space during the pandemic and operated instead from home. Two businesses--one a daycare and the other a personal services business--had moved out of private residences and into small commercial spaces upon registering their businesses in Tigard. And one construction business had simply started over the last year and still operated from a private residence.

This finding suggests an important shortcoming of Attune Planning's work and perhaps in the scope of Tigard MADE: neither has attended to the regulatory regime or public-support needed by very small businesses operating in Tigard's residential areas. This is problematic because residential areas seem to be places that many small businesses start and why strict Euclidean zoning does not reflect user experiences.

One technical services business owner provided a strong example of the sort of regulatory reform that the City of Tigard should examine in order to support its very small businesses. That business owner reported that, upon registering their business at a private residence, they had to sign an agreement indicating that no employees of the business would ever visit that residence for any purpose. There are obvious reasons why such a requirement might be worthwhile from the city's perspective; it could help safeguard against business externalities (e.g. heightened traffic, parking use, outdoor equipment storage) spilling into residential areas. However, in the age of the COVID-19 pandemic, residential areas seem more mixed-use than in recent memory. They contain myriad home offices, businesses, civic, recreational, and institutional uses. That means now is a perfect time to examine whether very small businesses could be better supported in Tigard when they start in private residences.

Price matters, and Tigard worked for interviewees' price range

Four of seven business owners interviewed reported having rented a commercial space in Tigard during the last year. All four indicated that they were able to find pricing that fit their budget, and several indicated how important that was in deciding to locate in Tigard. This finding has selection bias; of course new business owners chose to locate where they could afford. But it also validates this report's focus on regulations that could contribute to pricing out certain users or obstruct affordable rental and ownership opportunities. Demographic factors such as race, educational attainment, and gender are well known to be predictive of differences in income and wealth, which in turn determine where one can afford to buy or rent commercial space. Thus, by focusing considerable attention on the interactions of land use and affordability, this report supports a fairer playing field for less privileged and historically marginalized populations.

Owners seek their customer base and target demographics

Being close to a customer base was another common reason owners gave for locating in Tigard. One personal services business owner indicated that their business sought to locate near and attract customers from the racially diverse base available in Tigard, visible--for instance--in the business mix along 99W.

Tigard is business friendly, but could reexamine specific requirements

In general, owners perceived the City of Tigard as business friendly and reported few issues starting their businesses in Tigard. Only two examples beyond those provided above rise to the level of mentioning.

A possible high fee or unclear fee: The owner of a daycare noted that, when permitting their business, they had to pay a $6,000 fee. They reported the fee was scaled according to the number of children that would be served by the daycare. However, other moments in the interview seemed to suggest perhaps the fee had been related to the conversion of the rental space from its previous office use to its new use as a daycare.

Extraordinary lighting standards: The other example stems from the owner of a cannabis wholesaler. Upon permitting the business, they encountered a requirement for strong outdoor lighting, so bright they said they one could practically read a magazine across the street at night. They felt that requirement--even if specifically tailored toward cannabis uses--was onerous and unnecessary. To Attune Planning, it signals that Tigard would do well to review such requirements and reconsider which are truly necessary.

Appendix B – Example Engagement in Code

Below is an example of what including the requirements for public engagement might look like when included in a base code

City of Portland Zoning Code

[Example Commercial Code]

33.130.050 Neighborhood Contact [Example Commercial Code]

Neighborhood contact is a set of outreach steps that must be taken before certain developments can be submitted for approval. Neighborhood contact is required as follows:

A. Neighborhood contact I.

1. Neighborhood contact I requirements. When proposed development will add at least 10,000 square feet and not more than 25,000 square feet of net building area to a site, the neighborhood contact steps of 33.705.020.A., Neighborhood contact I, are required. All the steps in 33.705.020.A. must be completed before an application for a building permit can be submitted.

2. Exemption. If the proposed development has already met the neighborhood contact requirements as part of a land use review process, it is exempt from the neighborhood contact requirements.

B. Neighborhood contact II.

1. Neighborhood contact II requirements. When the proposed development will add more than 25,000 square feet of net building area to a site, the neighborhood contact steps of 33.705.020.B., Neighborhood contact II, are required. All of the steps in 33.705.020.B. must be completed before an application for a building permit can be submitted.

2. Exemption. If the proposed development has already met the neighborhood contact requirements as part of a land use review process, it is exempt from the neighborhood contact requirements.

[Example Industrial Code]

33.140.050 Neighborhood Contact in EG and I Zones

A. Purpose. Neighborhood contact is required when a new storage structure for any type of fuel will be built on a Bulk Fossil Fuel Terminal because of the impacts that fuel projects can have on the surrounding community.

B. Neighborhood contact requirement. Proposals meeting the following conditions are subject to the neighborhood contact steps of 33.705.020.B., Neighborhood contact II. All of the steps in 33.705.020.B must be completed before an application for a building permit can be submitted. 1. The proposed development has not been subject to a land use review; and 2. The proposed development includes at least one new structure for the storage of any type of fuel on a site with a Bulk Fossil Fuel Terminal use.

33.140.055 Neighborhood Contact in EX Zone

Neighborhood contact is a set of outreach steps that must be taken before certain developments can be submitted for approval. Neighborhood contact is required as follows:

A. Neighborhood contact I.

1. Neighborhood contact I requirements. When proposed development will add at least 10,000 square feet and not more than 25,000 square feet of net building area to a site, the neighborhood contact steps of 33.705.020.A., Neighborhood contact I, are required. All the steps in 33.705.020.A. must be completed before an application for a building permit can be submitted.

2. Exemption. If the proposed development has already met the neighborhood contact requirements as part of a land use review process, it is exempt from the neighborhood contact requirements.

B. Neighborhood contact II.

1. Neighborhood contact II requirements. When the proposed development will add more than 25,000 square feet of net building area to a site, the neighborhood contact steps of 33.705.020.B., Neighborhood contact II, are required. All of the steps in 33.705.020.B. must be completed before an application for a building permit can be submitted.

2. Exemption. If the proposed development has already met the neighborhood contact requirements as part of a land use review process, it is exempt from the neighborhood contact requirements.

Appendix C – Pittsburgh Performance Points

Starts on the following page.

915.07. Performance Points System.

915.07.A Purpose

The City of Pittsburgh recognizes that communities that embrace innovation and livability while remaining affordable to all citizens will be more sustainable both in their demands on the environment and their ability to continue to grow and succeed over time. This set of incentives for development seeks to increase the provision of affordable housing, increase the number of green buildings constructed, and incent the retention of existing structures that represent the city's built heritage.

915.07.B Applicability

The following incentives are available within designated zoning districts that include the following elements:

1. Provision enabling use of this bonus system;
2. Bonus Goals and Points section specifying the points awarded for each option; and
3. Bonus section specifying how points earned through the incentives can be used.

915.07.C Definitions

1. **1.5 inches of Rainfall in a 24-Hour Period** shall mean the total volume of rainwater that falls on the site area at a depth of 1.5 inches in a single 24-hour period. This standards is based on PWSA analysis of events that have caused local flooding.
2. **95th Percentile Rain Event** shall mean the measured precipitation depth accumulated over a 24-hour period for the period of record that ranks in the 95th percentile rainfall depth based on the range of all daily event occurrences during this period.
3. **Affordable Housing** shall mean housing with a gross cost, including utilities, that does not exceed thirty (30) percent of the occupant's income.
4. **AIA 2030 Commitment Average Savings Level** shall mean the average reported energy reduction of architecture firms that have committed to the AIA (American Institute of Architects) 2030 Challenge. Average savings levels can be found in the annual AIA 2030 Commitment Report.
5. **Area Median Income (AMI)** shall mean the average medium income of the metropolitan area (MSA) or Non-Metropolitan areas (counties) as established annually by the U.S. Department of Housing and Urban Development (HUD).
6. **Building Energy Model (BEM)** shall mean the use of a physics-based software simulation of building energy use. A BEM program takes as input a description of a building form and materials, the building's use and operation including schedules for occupancy, lighting, plug-loads, and thermostat settings, and combines these inputs with information about local weather and uses physics equations to calculate thermal loads, system response to those loads, and resulting energy use, along with related metrics like occupant comfort and energy costs.
7. **Distributed Energy Systems** shall mean a range of smaller-scale technologies designed to provide electricity and thermal energy closer to consumers. These approaches include fossil and renewable energy technologies, micro-grids, on-site energy storage, and combined heat and power systems. Technologies could include: existing district energy facilities combined heat and power systems, microgrids, fuel cells, and batteries.

8. **Green Infrastructure** shall mean a strategic network of vegetated areas and water retention techniques intended to mitigate stormwater problems. Examples of green infrastructure include: greenways, rain gardens, bioswales, green roofs, and rain barrels.

9. **On-Site Renewable Energy** shall mean renewable sources, such as wind, solar, and co-generation, that are generated on the project site, thereby relieving reliance on the grid and providing alternative sources of electricity.

10. **National Median Site Energy Use Intensity** shall mean the middle of the national population - half of buildings use more energy, half use less. The National median source EUI is published regularly by the U.S. Environmental Protection Agency's Energy Star program.

11. **Native Plants** shall mean plants indigenous to Western Pennsylvania. This includes plants that have developed or occurred naturally, excluding invasive species.

12. **Networked Walkshed** shall mean the land area within a defined walking range, traversable on established streets or pathways.

13. **Pittsburgh 2030 District** shall mean the initiative led by the Green Building Alliance that supports business and building owners and managers in working toward fifty (50) percent reductions in energy use, water consumption, and transportation emissions (below baselines) by the year 2030.

14. **Rapid Services** shall mean all modes of transit which use an exclusive right-of-way or have at least seventy-five (75) percent of route miles along a fixed guideway.

15. **Site Energy Use Intensity (EUI)** shall mean the total, annual building energy use normalized by its gross square footage. Site energy is the amount of energy consumed by a building or development on site, usually reflected on utility bills, but including heat and power generated and used on site. Site EUI is a building's total annual on-site energy usage in kBTU/ft^2 and can be determined by using an online calculator to aid in the assessment of energy performance of commercial building designs and existing buildings such as the U.S. Environmental Protection Agency's Target Finder.

915.07.D Bonus Goals and Points

Goal		Points
1. On-Site Energy Consumption - New Construction		
1.a	Site energy use intensity is at AIA 2030 Commitment average savings levels.	1
1.b	Site energy use intensity is at least 70% below national median.	2
1.c	Site energy use is 80% or more below national median.	3
2. On-Site Energy Consumption - Existing Buildings		
2.a	Site energy use intensity is at least 20% below national median.	1
2.b	Site energy use intensity is at least 35% below national median.	2
2.c	Site energy use is 50% or more below national median.	3
3. On-Site Energy Generation		
At least one (1) point from On-Site Energy Consumption required prior to using the On-Site Energy Generation points below.		
3.a	At least 25% of energy use is generated from on-site renewable sources.	1
3.b	At least 50% of energy use is generated from on-site renewable sources; or	2
	Connecting to distributed energy systems.	
3.c	75% or more of energy use is generated from on-site renewable sources.	3
4. Affordable Housing		
Available only to projects where at least 50% of the gross floor area is used for residential units.		

Points for options 4.c and 4.d below will only be awarded to development projects providing at least 20 housing units.		
4.a	At least 5-14.9% of units for rent are affordable housing for persons at or below 80% AMI.	1
4.b	At least 5-14.9% of units for sale are affordable housing for persons at or below 80% AMI; or	2
	At least 5-14.9% of units for rent are affordable housing for persons at or below 60% AMI; or	
	At least 15-19.9% of units for rent are affordable housing for persons at or below 80% AMI.	
4.c	At least 15-19.9% of units for sale are affordable housing for persons at or below 80% AMI; or	3
	At least 15-19.9% of units for rent are affordable housing for persons at or below 60% AMI; or	
	At least 20% or more of units for rent are affordable housing for persons at or below 80% AMI.	
4.d	20% or more of units for sale are affordable housing for persons at or below 80% AMI; or	4
	20% or more of units for rent are affordable housing for persons at or below 60% AMI.	
5. Rainwater		
All vegetated Green Infrastructure must use at least 50% Native Plants.		
The Zoning Administrator can update payment-in-lieu options as needed to remain consistent with Green Infrastructure construction costs.		
5.a	At least 50% of 1.5 inches of rainfall in a 24-hour period, including a peak of 1.05 inches in 15 minutes, or a 95th percentile rain event on-site, whichever is greater, is captured using Green Infrastructure installations; or	1
	At least 15% of total volume of rainfall in a 24-hour period, including peak of 1.05 inches in 15 minutes, or a 95th percentile rain event on-site, whichever is greater, can be captured and reused on-site; or	
	For sites where retention, infiltration, or reuse strategies using Green Infrastructure are not possible at the levels above, a one-time payment-in-lieu of $6 per gallon is provided to the Stormwater Trust Fund.	
5.b	At least 75% of 1.5 inches of rainfall in a 24-hour period, including a peak of 1.05 inches in 15 minutes, or a 95th percentile rain event on-site, whichever is greater, is captured using Green Infrastructure installations; or	2
	At least 30% of total volume of rainfall in a 24-hour period, including peak of 1.05 in 15 minutes, or a 95th percentile rain event on-site, whichever is greater, can be captured and reused on-site.	
	For sites where retention, infiltration, or reuse strategies using Green Infrastructure are not possible at the levels above, a one-time payment-in-lieu of $9 per gallon is provided to the Stormwater Trust Fund.	
5.c	100% or more of 1.5 inches of rainfall in a 24-hour period, including a peak of 1.05 inches in 15 minutes, or a 95th percentile rain event on-site, whichever is greater, is captured using Green Infrastructure installations; or	3
	45% or more of total volume of rainfall in a 24-hour period, including peak of 1.05 in 15 minutes, or a 95th percentile rain event on-site, whichever is greater, can be captured and reused on-site.	
	For sites where retention, infiltration, or reuse strategies using Green Infrastructure are not possible to the levels above, a one-time payment-in-lieu of $12 per gallon is provided to the Stormwater Trust Fund.	
6. Building Reuse		
6.a	Exterior design of new development is compatible with nearby structures more than fifty (50) years old including the use of similar window and door sizes and materials, cladding materials, bays, cornices, and other primary structure elements.	1

6.b	At least 75% of street facing building facades from structures more than 50 years old are restored and integrated into new development.	2
6.c	Existing building shell is restored and retained.	3
7. Riverfront Public Access Easements, Trails and Amenities		
7.a	For parcels that abut the riverfront and are not separated by a right-of-way, provision of a riverfront public access easement held by the City of Pittsburgh of at least 20 feet in width and runs the entire length of the parcel's riverfront boundary.	1
7.b	For sites where no trail exists and a public easement has been made, construction of a trail that meets all City standards as well as national standards of Manual on Uniform Traffic Control Devices (MUTCD), and that connects to existing adjacent trails when feasible.	2
7.c	For sites where an existing trail is present and a public easement has been made, improvement of trail to City standards as well as national standards of Manual on Uniform Traffic Control Devices (MUTCD), and that connects to existing adjacent trails when feasible.	1
7.d	For sites where a riverfront or riverfront-adjacent trail is not feasible, development provides public access that allows for or contributes to continuous mobility parallel the riverfront.	2
7.e	Provision of public restrooms accessible from the public riverfront trail, open during expected hours of trail use.	2
7.f	Provision of public access easement and passageway built in accordance with Section 905.04.G.5(a) and (b), providing connections from public rights-of-way to the riverfront.	1
8. Neighborhood Ecology		
8.a	Ground-level surface parking area is designed so that a minimum of 50% of the total paved area is shaded by solar panels.	1
8.b	The top level of a parking structure is designed so that a minimum of 50% of the total area is shaded by solar panels.	1
9. Public Art		
The percent of estimated gross construction cost applied to public art includes artist engagement; design, fabrication and placement of art; insurance; and funds dedicated for ongoing maintenance.		
9.a	At least 1% of the estimated gross construction cost is applied directly to the creation and maintenance of on-site public art as defined by the URA's Public Art Resource Guide for Developers, OR made as a one-time contribution to the City's Public Art Fund for use by the City for art on publicly owned lands within the same neighborhood.	1
9.b	At least 2% of the estimated gross construction cost is applied directly to the creation and maintenance of on-site public art as defined by the URA's Public Art Resource Guide for Developers, OR made as a one-time contribution to the City's Public Art Fund for use by the City for art on publicly owned lands within the same neighborhood.	2
9.c	At least 3% of the estimated gross construction cost is applied directly to the creation and maintenance of on-site public art as defined by the URA's Public Art Resource Guide for Developers, OR made as a one-time contribution to the City's Public Art Fund for use by the City for art on publicly owned lands within the same neighborhood.	3
10. Urban Fabric		
10.a	Structured parking is designed to allow for conversion to other (non-parking) uses.	2
11. Transit-Oriented Development		
11.a	Site is within ½ mile networked walkshed of rapid service routes.	1
11.b	On-site transit station for rapid service routes, designed as an integral part of the development project and to meet Port Authority standards for transit stations.	3

915.07.E Enforcement

1. If a project is awarded a height or riparian buffer bonus pursuant to this subsection, the Developer shall provide the Department of City Planning with satisfactory evidence of having completed the following steps in the process toward achieving the requirements of the bonus:

    a. On-site energy consumption and production:

        (1) Application and predesign phase: Submission of the p4 Energy Declaration or other form as proscribed by the Zoning Administrator clearly indicating the EUI target of the building based upon percent reduction from the baseline. The baseline as determined by building use type, is based upon the 2003 Commercial Building Energy Consumption Survey (CBECS) data. In addition to EUI target of the building, the Declaration must also include the energy efficiency approaches and technologies that will be used to minimize demand, any on-site energy generation systems, and the amount of expected building demand that will be offset.

        (2) Design completion and prior to construction: Provide design narrative and construction documents. For projects with at least 20,000 square feet of gross floor area a BEM will be required showing that the building is designed to meet the desired site EUI reductions compared to national averages for the building type and size. All projects, including those with less than 20,000 square feet of gross floor area, are required to submit an updated p4 Energy Declaration or other form as proscribed by the Zoning Administrator.

        (3) Construction completion and building occupancy: Provide final performance-based commissioning report and/or applicable third party certification of energy performance (e.g., Passive House, Leadership in Energy and Environmental Design, Living Building Challenge).

        (4) Following first-year operations completion: Provide proof of whole building energy consumption, verified with utility invoices or digital meter data for energy consumed and produced or third party verified by Professional Engineer or equivalent. This requirement may be satisfied by ongoing participation in the Pittsburgh 2030 District.

    b. Affordable housing

        (1) Application and predesign phase: Provide a matrix that documents the unit count and includes AMI of occupants. Identify in writing all subsidies and/or financing programs the project will utilize in the provision of affordable housing. Provide letters of commitment for any subsidies and/or financing secured.

        (2) Design completion and prior to construction: Provide floor plans that identify housing unit types and location of amenities, entrances, and lobbies with American Disabilities Act (ADA) accessibility. Provide letters of commitment for any subsidies and/or financing secured. Where letters of commitment are forthcoming, this requirement can be met by submitting the project for review by the Housing Department of the Urban Redevelopment Authority which will provide a memo to the Department of City Planning identifying how the project satisfies the p4 Affordability component.

    c. Rainwater

        (1) Application and predesign phase: Provide a preliminary stormwater management plan clearly identifying how the project will satisfy the bonus.

        (2) Design completion and prior to construction: Provide a Stormwater Management Site Plan clearly identifying how the project will satisfy the bonus.

(3) Construction completion and building occupancy: Register the project with the Pittsburgh Water and Sewer Authority (PWSA).

(4) Following first-year operations completion: Provide a performance-based report following one (1) year of operation that shows Green Infrastructure is performing as specified in the project's Stormwater Management Site Plan.

d. On-Site Public Art:

(1) Application and predesign phase: Provide a preliminary public art plan that clearly identifies how the project will satisfy the bonus, including estimated gross construction cost, opportunities for inclusion of public art, and a plan for artist engagement.

(2) Design completion and prior to construction: The Department of City Planning will approve final plan for public art including a final budget, design of public art element(s), and proof of establishment of fund for ongoing maintenance.

(3) Construction completion and building occupancy: Provide Department of City Planning with verification that art was installed as designed along with breakdowns and receipts of final project costs. If art was not installed as designed, provide narrative explanation of what alterations were made and why.

2. If the project does not provide satisfactory evidence of achieving the performance standards of each used bonus within three (3) years of receiving its initial certificate of occupancy, then the developer shall be subject to a fine equal to one (1) percent of the construction costs. If the fine is not paid within thirty (30) days of the date it is imposed, then the City shall have the authority to revoke the certificate of occupancy for the building.

(Ord. No. 48-2017, § 7, 12-8-17; Ord. No. 31-2018, § 13, eff. 8-6-18)

Appendix D – Arlington, VA 2020 Update

Starts on the following page.

Attachment 1 - 2020 Green Building Incentive Policy (December 2020)

Arlington County's Green Building Bonus Density Incentive Policy is a voluntary program to evaluate special exception site plan requests for bonus density consistent with Section 15.5.7.A.1 of Arlington County's Zoning Ordinance. All site plan project developers are encouraged to include specific green building components in site plan projects and to commit to becoming certified under the U.S. Green Building Council's (USGBC) LEED Version 4 or Version 4.1 program, or Earthcraft Multifamily program. Additionally, all projects are encouraged to achieve Energy Star certification post-occupancy. Arlington offers potential levels of bonus density (as measured in Floor Area Ratio (FAR)) when the developer commits to specific sustainability criteria as follows:

0.25 FAR	0.35 FAR	0.45 FAR	0.55 FAR	0.70 FAR

• LEED Gold 4 or 4.1
• Energy Optimization Performance Improvement
• Baseline Prerequisites
• ENERGY STAR Score 75 – or- LEED site EUI performance verification
	• LEED Gold 4 or 4.1
	• Energy Optimization Performance Improvement
	• Baseline Prerequisites
	• ENERGY STAR Score 80 – or- LEED site EUI performance verification
	• 3 Items from *Extra list*
		Option 1:
		• LEED Gold 4 or 4.1
		• Energy Optimization Performance Improvement
		• Baseline Prerequisites
		• ENERGY STAR Score 85 – or- LEED site EUI performance verification
		• 4 Items from *Extra List*
		
		Option 2:
		• Baseline Prerequisites
		• Passive House (PHIUS) certification
			Option 1:
			• LEED Gold 4 or 4.1
			• Energy Optimization Performance Improvement
			• Baseline Prerequisites
			• ENERGY STAR Score 90 – or- LEED site EUI performance verification
			• 6 Items from *Extra List* including:
			  o Energy Optimization
			  o Renewable Energy plus Storage
			• Carbon Offsets (ILFI reference)
			
			Option 2:
			• Baseline Prerequisites
			• Passive House (PHIUS) certification
			• Carbon Offsets (ILFI reference)
			• Renewable Energy plus Storage from *Extra List*
				• LEED Gold 4 or 4.1
				• Energy Optimization Performance Improvement
				• Baseline Prerequisites
				• Zero Energy **– or –** Zero Carbon certification

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Minimum Criteria for 0.25 bonus FAR

1) Green Building Certification
   Multifamily:
   - LEED Multifamily version 4.1 Gold certification, LEED for Homes Midrise version 4 Gold certification, or Earthcraft Multifamily Gold certification for multifamily development -or-

   Non-residential Commercial:
   - LEED version 4 or 4.1 Gold Certification (office, hotel, university, etc.)

2) Energy Optimization
   Meet the criteria that would earn the project points as part of the green building certification as follows:
   - At least 10% performance improvement for LEED version 4.1 EA credit Optimize Energy Performance
     -or-
   - At least 20% performance improvement for LEED version 4 EA credit Optimize Energy Performance/Annual Energy Use
     -or-
   - HERS index of 65 or lower if pursuing LEED version 4.1 Multifamily EA credit Optimize Energy Performance Option 3 HERS index rating
     -or-
   - HERS index of 65 or lower if pursuing Earthcraft Multifamily certification

3) Post-Occupancy Building Performance and Certification
   Within four years of occupancy:
   - Earn ENERGY STAR post-occupancy building certification with a score of at least 75
     -or-
   - Demonstrate with energy utility data that the design site EUI identified in the energy model as part of the building's LEED certification has been met with the building at least 70% occupied (12-month average occupancy)

4) Incorporate into the project all other baseline prerequisites as outlined in Attachment 1.

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Minimum Criteria for 0.35 bonus FAR

1) Green Building Certification
   Multifamily:
   - LEED Multifamily version 4.1 Gold certification, LEED for Homes Midrise version 4 Gold certification, or Earthcraft Multifamily Gold certification for multifamily development -or-

   Non-residential Commercial:
   - LEED version 4 or 4.1 Gold Certification (office, hotel, university, etc.)

2) Energy Optimization
   Meet the criteria that would earn the project points as part of the green building certification as follows:
   - At least 10% performance improvement for LEED version 4.1 EA credit Optimize Energy Performance
     -or-
   - At least 20% performance improvement for LEED version 4 EA credit Optimize Energy Performance/Annual Energy Use
     -or-
   - HERS index of 65 or lower if pursuing LEED version 4.1 Multifamily EA credit Optimize Energy Performance Option 3 HERS index rating
     -or-
   - HERS index of 65 or lower if pursuing Earthcraft Multifamily certification

3) Post-Occupancy Building Performance and Certification
   Within four years of occupancy:
   - Earn ENERGY STAR post-occupancy building certification with a score of at least 80
     -or-
   - Demonstrate with energy utility data that the design site EUI identified in the energy model as part of the building's LEED certification has been met with the building at least 70% occupied (12-month average occupancy)

4) Incorporate into the project all other baseline prerequisites as outlined in Attachment 1.

5) Incorporate into the project at least 3 items from the "Extra" List outlined in Attachment 2.

DRAFT

Minimum Criteria for 0.45 bonus FAR

1) Green Building Certification
   Multifamily:
   - LEED Multifamily version 4.1 Gold certification, LEED for Homes Midrise version 4 Gold certification, or Earthcraft Multifamily Gold certification for multifamily development -or-

   Non-residential Commercial:
   - LEED version 4 or 4.1 Gold Certification (office, hotel, university, etc.)

2) Energy Optimization
   Meet the criteria that would earn the project points as part of the green building certification as follows:
   - At least 15% performance improvement for LEED version 4.1 EA credit Optimize Energy Performance
     -or-
   - At least 25% performance improvement for LEED version 4 EA credit Optimize Energy Performance/Annual Energy Use
     -or-
   - HERS index of 58 or lower if pursuing LEED version 4.1 Multifamily EA credit Optimize Energy Performance Option 3 HERS index rating
     -or-
   - HERS index of 58 or lower if pursuing Earthcraft Multifamily certification

3) Post-Occupancy Building Performance and Certification
   Within four years of occupancy:
   - Earn ENERGY STAR post-occupancy building certification with a score of at least 85
     -or-
   - Demonstrate with energy utility data that the design site EUI identified in the energy model as part of the building's LEED certification has been met with the building at least 70% occupied (12-month average occupancy).

4) Incorporate into the project all other baseline prerequisites as outlined in Attachment 1.

5) Incorporate into the project at least 4 items from the "Extra" List outlined in Attachment 2.

-or-

1) Green Building Certification
   For any building type:
   - PHIUS+ 2018 certification

2) Incorporate into the project all other baseline prerequisites as outlined in Attachment 1.

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Minimum Criteria for 0.55 bonus FAR

1) Green Building Certification
   Multifamily:
   - LEED Multifamily version 4.1 Gold certification, LEED for Homes Midrise version 4 Gold certification, or Earthcraft Multifamily Gold certification for multifamily development -or-

   Non-residential Commercial:
   - LEED version 4 or 4.1 Gold Certification (office, hotel, university, etc.)

2) Energy Optimization
   Meet the criteria that would earn the project points as part of the green building certification as follows:
   - At least 15% performance improvement for LEED version 4.1 EA credit Optimize Energy Performance
     -or-
   - At least 25% performance improvement for LEED version 4 EA credit Optimize Energy Performance/Annual Energy Use
     -or-
   - HERS index of 58 or lower if pursuing LEED version 4.1 Multifamily EA credit Optimize Energy Performance Option 3 HERS index rating
     -or-
   - HERS index of 58 or lower if pursuing Earthcraft Multifamily certification

3) Post-Occupancy Building Performance and Certification
   Within four years of occupancy:
   - Earn ENERGY STAR post-occupancy building certification with a score of at least 90
     -or-
   - Demonstrate with energy utility data that the design site EUI identified in the energy model as part of the building's LEED certification has been met with the building at least 70% occupied (12-month average occupancy)

4) Incorporate into the project all other baseline prerequisites as outlined in Attachment 1.

5) Incorporate into the project at least 6 items from the "Extra" List outlined in Attachment 2 including:
   - "Additional Energy Optimization"
   - "Renewable Energy plus Storage"

6) Purchase Carbon Offsets that meet the criteria of the International Living Future Institute (ILFI) Zero Carbon Certification:
   - One-time carbon offsets must be secured that are equivalent to the total embodied carbon emissions associated with the project scope. Acceptable forms of carbon offsets include Certified Emission Reduction (CER) and Verified Emission Reduction (VER) carbon credits; Renewable Energy Certificates (RECs) are not acceptable.
   - Carbon offsets must be certified by Green-e Climate (www.green-e.org), or an equivalent program. Other certification programs must be submitted to the Dialogue for approval.
   - Carbon offsets may also be generated anywhere in the world; offsets do not have to be local, although local or community-based solutions that provide additional socioeconomic benefits are encouraged.

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- The amount of carbon offsets shall be calculated using the methodology outlined in ILFI's Zero Carbon Certification.

-or-

1) Green Building Certification
   For any building type:
   - PHIUS+ 2018 certification

2) Incorporate into the project all other baseline prerequisites as outlined in Attachment 1.

3) Incorporate into the project "Renewable Energy plus Storage" as outlined in Attachment 2.

4) Purchase Carbon Offsets that meet the criteria of the ILFI's Zero Carbon Certification:
   - One-time carbon offsets must be secured that are equivalent to the total embodied carbon emissions associated with the project scope. Acceptable forms of carbon offsets include Certified Emission Reduction (CER) and Verified Emission Reduction (VER) carbon credits; Renewable Energy Certificates (RECs) are not acceptable.
   - Carbon offsets must be certified by Green-e Climate (www.green-e.org), or an equivalent program. Other certification programs must be submitted to the Dialogue for approval.
   - Carbon offsets may also be generated anywhere in the world; offsets do not have to be local, although local or community-based solutions that provide additional socioeconomic benefits are encouraged.
   - The amount of carbon offsets shall be calculated using the methodology outlined in ILFI's Zero Carbon Certification.

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Minimum Criteria for 0.70 bonus FAR

1) Green Building Certification
   Multifamily:
   - LEED Multifamily version 4.1 Gold certification, LEED for Homes Midrise version 4 Gold certification, or Earthcraft Multifamily Gold certification for multifamily development -or-

   Non-residential Commercial:
   - LEED version 4 or 4.1 Gold Certification (office, hotel, university, etc.).

2) Energy Optimization
   Meet the criteria that would earn the project points as part of the green building certification as follows:
   - At least 15% performance improvement for LEED version 4.1 EA credit Optimize Energy Performance
     -or-
   - At least 25% performance improvement for LEED version 4 EA credit Optimize Energy Performance/Annual Energy Use
     -or-
   - HERS index of 58 or lower if pursuing LEED version 4.1 Multifamily EA credit Optimize Energy Performance Option 3 HERS index rating
     -or-
   - HERS index of 58 or lower if pursuing Earthcraft Multifamily certification

3) Post-Occupancy Building Performance and Certification
   Within four years of occupancy earn one of the following performance-based certifications:
   - Zero Carbon certification by the International Living Future Institute -or-
   - Zero Energy certification by the International Living Future Institute -or-
   - Other Zero Carbon or Zero Energy certification or equivalent certification as approved by the County Manager

4) Incorporate into the project all other baseline prerequisites as outlined in Attachment 1.

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Appendix 1- Baseline Prerequisites

ENERGY STAR appliances and fixtures
ENERGY STAR label for all clothes washers, dryers, refrigerators, dishwashers, and at least 90% LED or ENERGY STAR labeled light fixtures installed in residential and hotel units

WaterSense Plumbing Fixtures
WaterSense label for all toilets, bathroom faucets, and showerheads installed in residential and hotel units

Refrigerant Leakage
In addition to the energy code requirements for commissioning activities, the Commissioning Agent shall oversee the on-site refrigerant charging process and verify the following:

- Collect as-built refrigerant piping line length calculations (as-designed lengths will not be accepted)
- Collect and review the detailed refrigerant pipe pressure and vacuum testing reports that have been based on the as-built calculations for completeness and accuracy
- Collect the charge confirmation documentation

Equity, Diversity, and Inclusion program
At least one member of the development team shall be employed by an organization with a racial and ethnic diversity, equity, and inclusion program within its management operations. Specifically, the firm's program shall include:

- Staff training plan that reflects the firm's understanding of structural racism and its intersection with the building industry.
- Professional development opportunities and data-driven policies used to identify and invest in staff diversity among leadership levels.
- Strategies in place to ensure racial and ethnic inclusion at all levels of the organization, including the Board of Directors level.

Document compliance with a written description of how the firm implements and institutionalizes diversity through policy, management philosophy, and training. Describe how the firm, on a day-to-day basis, fosters a work environment that is inclusive and conducive to diverse staff. Include copies of personnel and other relevant policies, training provided to staff, description of the general management philosophy as it relates to diversity.

Energy Benchmarking
Permanently install energy meters or monitoring devices and software service capable of tracking and remote download of at least monthly electric and gas consumption for the entire building. Utility billing data may be used as an alternative if the owner receives energy utility bills for all energy uses in the building directly from the utility. After occupancy, provide utility reporting data through Energy Star Portfolio Manager each year for 10 years.

Air Sealing of Ventilation Supply and Exhaust
To ensure fresh air is delivered as intended to all occupied spaces in the building, seal all central vertical and horizontal supply ductwork with aerosolized duct sealant. All code requirements for joints, sealants, and connections must be met.
-and-
For commercial and multifamily buildings, meet the criteria for central ventilation exhaust testing and performance as required by Energy Star Multifamily High-Rise certification.

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Electric Vehicle Charging Infrastructure

Exceed the criteria that would earn the project points for LEED version 4.1 credit Electric Vehicles option 1- Electric Vehicle Charging and option 2 - Electric Vehicle Charging Infrastructure, with electric vehicle charging stations for at least 4% of parking spaces and electric vehicle infrastructure for at least 15% of parking spaces.

Human Interaction with Nature (Biophilia)

Provide a narrative describing how the project enhances existing and/or creates new natural spaces for occupants and the public to interact with nature and creates habitat for people, plants and wildlife. Components to be evaluated include (but are not limited to):

- Enhance connections between humans and nature at the ground level and as part of the building
  - Provide opportunities to interact with nature at the ground level
  - Provide opportunities to interact with nature as part of the building (indoor gardens, green walls, atria, balconies, roof amenity space, etc.)
  - Enhance views of nature and green spaces
  - Provide access to water, where possible
  - Provide views of the sky
  - Create access to nature sounds
  - Create linkages to existing natural resources and adjoining open space (physical or visual connections)
- Create or expand natural habitats
  - Plant native trees and plants (including pollinator gardens, butterfly gardens, bird nesting areas, meadows, etc.)
  - Show that the Project meets or exceeds tree canopy requirements stipulated in the applicable sector plan
- Use natural forms and materials in design and construction
- Provide energy and environmental conservation co-benefits
  - Renewable energy (solar) access
  - Shading of outdoor space
  - Mitigate heat island
  - Reduced stormwater runoff (minimize impervious area)
  - Minimized air quality impacts (indoor – low VOC materials, minimize natural gas combustion; and outdoor – bike parking, EV charging)

Bird-friendly Materials

A bird friendly material is defined as a building material or assembly that has, or has been treated to have a maximum threat factor of 30 in accordance with the American Bird Conservancy Bird Collision Deterrence Material Threat Factor Reference Standard, or with the American Bird Conservancy Bird-friendly Materials Evaluation Program at Carnegie Museum's Avian Research Center test protocol, or with a relevant ASTM standard.

The exterior wall envelope, and any associated openings, shall be constructed with bird friendly materials between 8 feet and 36 feet above grade. Alternatively, the exterior wall envelope between 8 feet and 36 feet above grade, and any associated openings, shall on a weighted average be constructed to achieve a maximum total building Bird Collision Threat Rating (BCTR) of 15 or less according to the methodology of LEED credit Bird Collision Deterrence. Materials other than bird friendly materials shall not exceed an aggregate of 10 square feet within any 10 feet by 10 feet square area of exterior wall between 8 and 36 feet above grade.

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Renewable Energy

i. Provide on-site solar generation (or other acceptable forms of renewable energy) equal to at least 2.0 watts per square foot of the roof area (including mechanical area) -or-
ii. Co-locate an integrated vegetated roof and solar whereby vegetated roof meets Virginia DEQ BMP standards and is equal to at least 12% of the roof area (including mechanical area) -and- on-site solar generation (or other acceptable forms of renewable energy) is equal to at least 1.5 watts per square foot of the roof area (including mechanical area) -or-
iii. Procure off-site solar ((or other acceptable forms of renewable energy) to meet the criteria that would earn the project at least one point for renewable energy procurement of Tier 2 renewable energy as outlined in LEED version 4.1 Energy and Atmosphere credit Renewable Energy.
iv. Alternative Compliance Path for Developments without sufficient solar exposure - Developments without sufficient solar exposure due to shading by surrounding development shall contribute to the Green Building Fund in the amount of $4/s.f. roof area (including mechanical equipment). Insufficient solar exposure is defined as having a Total Solar Resource Fraction (TSRF) or equivalent solar industry metric of less than 80% for square footage of roof area needed to accommodate the minimum required solar PV array. A request to qualify for the alternative compliance path must include a report prepared by a qualified solar professional that documents insufficient TSRF.

Light pollution reduction

At least 90% of exterior fixtures, excluding streetlights required by the County, shall meet the following specifications and have motion sensor controls, integrative photovoltaic cells, photosensors or astronomic time-clock operation. Note, Dark Sky-approved “Friendly Fixture” certification automatically meets the following specifications.

- Luminaires shall be fully shielded emitting no light above 90 degrees (with the exclusion of incidental light reflecting from fixture housing, mounts, and pole). The luminaire’s mounting hardware shall not permit mounting in any configuration other than those maintaining full shielding.
- Fixture shall have no sag or drop lenses, side light panels, up-light panels.
- Fixture shall employ warm-toned (3000K and lower) white light sources or may employ amber light sources or filtered LED light sources.
  Note: Exterior emergency lighting and lighting required by code for health and safety purposes are exempt shall be permitted to be exempted.

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Appendix 2 - Extra List Options

Envelope Commissioning and Air Leakage Test (whole building)
Meet the criteria that would earn the project at least two (2) points for LEED version 4.1 EA credit Enhanced Commissioning Option 2 Building Enclosure Commissioning
-and-
Complete a pressure test of the building enclosure performed in accordance with industry standards per ASTM E779 and E1827 testing methods and achieve air tightness of 0.40 cfm/sf ft @ 75 Pa or lower.

Renewable Energy

i. Provide on-site solar generation (or other acceptable forms of renewable energy) equal to at least 4.0 watts per square foot of the roof area (including mechanical area) -or-
ii. Co-locate integrated vegetated roof and solar whereby vegetated roof meets Virginia DEQ BMP standards and is equal to at least 12% of the roof area (including mechanical area) -and- on-site solar generation (or other acceptable forms of renewable energy) is equal to at least 3.5 watts per square foot of the roof area (including mechanical area) -or-
iii. Procure off-site solar to meet the criteria that would earn the project at least three points for renewable energy procurement of Tier 2 renewable energy as outlined in LEED version 4.1 Energy and Atmosphere credit Renewable Energy.

Additional Energy Optimization
Improve energy performance by an additional 5% beyond the minimum bonus density requirement for LEED version 4 or 4.1 Energy Optimization/Annual Energy Performance or 5 points lower on the HERS index.

Renewable Energy plus Storage
Install on-site renewable energy equal to at least 8 watts per square foot of the roof area (including mechanical equipment) -and- battery storage programmed for daily peak load shaving at least 1watthour per square foot of building GFA.

Electric Vehicle Charging Infrastructure
Exceed the criteria that would earn the project points for LEED version 4.1 credit Electric Vehicles option 1- Electric Vehicle Charging and option 2 - Electric Vehicle Charging Infrastructure, with electric vehicle charging stations for at least 10% of parking spaces and electric vehicle infrastructure for at least 50% of parking spaces.

Advanced Energy Metering
Meet the criteria that would earn the project at least one (1) point for LEED version 4.1 EA credit Advanced Energy Metering.

Building or Building Materials Reuse
Meet the criteria that would earn the project at least two (2) points for LEED version 4.1 MR credit Building Life Cycle Impact Reduction.

Grid Harmonization
Meet the criteria that would earn the project at least two (2) points for LEED version 4.1 EA credit Grid Harmonization.

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Grid Optimal
Meet the criteria that would earn the project at least two (2) points for LEED version 4.1 EA pilot credit Grid Optimal.

No Combustion in Domestic Hot Water Heating (multifamily and hotel only)
Include in the project electric heat pump or ground source heat pump, or other non-combustion-based technologies for domestic hot water heating. Electric resistance heating as the primary heating source is not considered an acceptable strategy to meet the criteria for this "Extra" list item.

No Combustion in Ventilation (multifamily and hotel only)
Include in the project a centralized or decentralized ventilation system utilizing energy recovery, electric heat pump, ground source heat pump, or other combination of strategies that eliminate the inclusion of combustion for heating (including preheat or emergency heating) of ventilation air. Electric resistance heating as the primary heat source is not considered an acceptable strategy to meet the criteria for this "Extra" list item.

Affordable Housing (multifamily only)
Meet the criteria that would earn the project at least one (1) point for LEED version 4.1 LT credit High Priority Site and Equitable Development, Option 2, path 2 Affordable Housing in Residential or Mixed-Use Projects.

Social equity within the operations and maintenance staff
Meet the criteria that would earn the project at least one (1) point for LEED version 4 Pilot credit Social Equity within the operations and maintenance staff, Option 1, path 1. Demonstrate criteria have been met by the property management company in place at the time of tenant occupancy.

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Appendix 3 – Automatic Update

Any project accepted by the County Manager after June 30, 2023 shall meet the following revised criteria:

Energy Optimization

For the 0.25 and 0.35 FAR bonus levels, meet the criteria that would earn the project points as part of the green building certification as follows:

- At least 14% performance improvement for LEED version 4.1 EA credit Optimize Energy Performance
  -or-
- At least 24% performance improvement for LEED version 4 EA credit Optimize Energy Performance/Annual Energy Use
  -or-
- HERS index of 60 or lower if pursuing LEED version 4.1 Multifamily EA credit Optimize Energy Performance Option 3 HERS index rating
  -or-
- HERS index of 60 or lower if pursuing Earthcraft Multifamily certification

For the 0.45 and higher FAR bonus levels, meet the criteria that would earn the project the following:

- At least 18% performance improvement for LEED version 4.1 EA credit Optimize Energy Performance
  -or-
- At least 28% performance improvement for LEED version 4 EA credit Optimize Energy Performance/Annual Energy Use
  -or-
- HERS index of 55 or lower if pursuing LEED version 4.1 Multifamily EA credit Optimize Energy Performance Option 3 HERS index rating
  -or-
- HERS index of 55 or lower if pursuing Earthcraft Multifamily certification

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Appendix 4 - Process and Implementation

Several components of the Green Building Incentive Policy warrant clear explanation.

- *Green Affordable Housing:* In order to offset the cost of construction and documentation of high performing "green" affordable housing units, any affordable housing project receiving tax credits from Virginia Housing (formerly VHDA) may request bonus density in exchange for a commitment to the criteria outlined in this policy, including all baseline prerequisites. Each project will be evaluated on a case-by-case basis for applicability. Affordable Housing site plan developments not requesting bonus density are expected to meet LEED Multifamily or Midrise, or Earthcraft Gold certification to ensure residents benefit from the improved indoor air quality and energy efficiency benefits of green buildings.

- *Green Building Fund:* Site plan projects that do not commit to LEED certification or Energy Star certification shall contribute to the Green Building Fund in the amount of $0.45 /s.f. of building GFA. The contribution will be refunded or waived if a developer applies for and receives LEED or Energy Star certification within 18 months after the last Certificate of Occupancy (CO) is issued. Bonus density projects without sufficient solar exposure as defined in Appendix 1 shall make a contribution to the Green Building Fund in the amount of $4/s.f. of roof area. Contributions to the Green Building Fund may be used by the County for green building education, including energy efficiency and renewable energy programming.

- *Units per acre to FAR calculation:* The methodology for determining the units per acre for LEED bonus calculations is as follows:
  - Determine the floor area attributed to LEED bonus FAR (example - for LEED Silver, multiply 0.25 by the site area).
  - Divide this bonus floor area by the average gross unit size in the proposed development to determine the number of units attributed to the LEED bonus.
  - Divide the number of units attributed to the LEED bonus by the site area.

- *Site Plans without green building bonus density:* For site plan projects not participating in the Green Building Incentive program, the standard site plan condition will require LEED version 4 or 4.1 Silver certification. In addition, the condition will specify ten years of energy reporting and the project will be designed to meet the minimum energy optimization performance as follows:
  - At least 10% performance improvement for LEED version 4.1 EA credit Optimize Energy Performance
    -or-
  - At least 20% performance improvement for LEED version 4 EA credit Optimize Energy Performance/Annual Energy Use
    -or-
  - HERS index of 65 or lower if pursuing LEED version 4.1 Multifamily EA credit Optimize Energy Performance Option 3 HERS index rating
    -or-

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- HERS index of 65 or lower if pursuing Earthcraft Multifamily certification

- *Enforcement* - Enforcement of the Green Building incentive policy will continue to require the developer to post a financial security prior to issuance of the partial Certificate of Occupancy for the last floor of space. In general, the financial security is calculated based on the square feet of bonus density approved multiplied by the average rental rate for space in the specific area of the County (as calculated by Arlington County's Real Estate Section). The amount of the financial security will be divided in two parts: a) 50% will be held until the LEED certification is achieved; and b) 50% will be held until the Energy Star certification (or equivalent) is achieved. Each certification will be guaranteed with a separate Performance Agreement and Financial Security. If a project fails to achieve the promised LEED certification within 24 months and Energy Star certification within 48 months of occupancy, the financial security amount(s) defaults to the County as follows.

Points missed	Percentage of financial security forfeited
1-2	25%
3-4	50%
5-6	75%
7+	100%

- *Green Building Rating System:* The policy requires that the LEED Building Design and Construction rating system be used for commercial construction (e.g., office, hotel, university, multi-family exceeding 20 stories). Multifamily developments less than 20 stories shall choose between the LEED Multifamily (Version 4.1), LEED for Homes Midrise (Version 4), or Earthcraft Multifamily rating systems. This applies to all site plans, including site plans that do not request bonus density.

- *Single Family Homes:* Site plans with single family and townhome construction may use Arlington's Green Home Choice certification program.

- Baseline prerequisites for each project will be evaluated on a case-by-case basis for applicability, taking into account site location, existing building renovations, building type, building size, etc.

- For site plans with multiple buildings, all buildings on the site must commit to earn the agreed upon LEED certification level in order to earn the full green building FAR bonus.

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Appendix E – Alpharetta Incentive Zoning

Starts on the following page.

Chapter 4 Incentive Zoning Regulations

1. Land Use Districts

Residential Village

This district is envisioned to accommodate higher density residential development in the form of townhouses, garden homes, and condominiums in addition to the detached homes allowed under existing zoning. Residential units should be designed in a manner that promotes a 'village' character reminiscent of an historic district. No retail or office uses are associated with this district for development along Canton Street. (If retail and office uses are developed as part of a project within the Residential Village on the Milton High School property which is located west of Canton Street and north of Milton Avenue, the Retail/Residential Mixed Use regulations may be used, where applicable.) The maximum residential density for development along Canton Street is 10 units per acre. The maximum residential density for development on the Milton High School property is 10 units per acre. In order to preserve the character of street fronts in historic downtown, residential development shall include the following:

1. existing trees shall be preserved to the greatest extent possible, especially along the street front, and supplemented wherever possible in order to promote a 'tree-lined' street appearance.
2. the fronts of buildings must face the street.
3. fences along streets shall be limited to wrought iron (or similar in appearance) having a height of no more than 42".
4. in order to avoid multiple curb cuts and disruption to the sidewalk, garages shall be located on the rear of buildings.
5. individual residential units may not have more than six steps from grade to the front entry door.

Retail/Office Mixed Use

This district is envisioned to accommodate pedestrian oriented retail development on the ground floor with office uses above. Residential units are allowed above the ground floor; however, this district is viewed as less desirable for residential development because properties are situated along arterial roadways. Retail uses may not include uses or features intended for the automobile such as drive-thru facilities, gas stations or automotive sales or repair.

Retail/Residential Mixed Use

This district is envisioned to accommodate pedestrian oriented retail development on the ground floor with residential units above. Office uses are also allowed above the ground floor. Retail uses may not include uses or features intended for toward the automobile such as drive-thru facilities, gas stations or automotive sales or repair.

Family Entertainment
This district is envisioned to accommodate entertainment uses such as theater, restaurant, jazz club, comedy club and dinner theater. Pedestrian oriented retail uses are also allowed in this district; however, residential development is not allowed in this district.

Civic/Institutional Mixed Use
This district is envisioned to accommodate public buildings such as government offices and a public library. Pedestrian oriented retail, office and residential uses are also allowed when incorporated around public spaces.

Green/Open Space
These areas serve as buffers, parks and greenway. No development can occur in these areas; however, accessory structures such as gazebos, picnic shelters, sculptures, focal point features and fountains may be built within these areas to enhance their use.

2. Height

The maximum height for buildings within the Historic Downtown Overlay District is 4 stories or 60 feet, whichever is less, except as follows: (a.) within the Residential Village situated along Canton Street, building heights shall not exceed 3 stories or 40 feet, whichever is less; (b.) building heights shall not exceed 3 stories or 40 feet, whichever is less, within the first 100 feet of a common property line with a residential development which was in existence prior to the adoption of these regulations; (c) limited portions of prominent buildings at the end of view corridors may have a height not to exceed 5 stories or 75 feet within the Civic/Institutional Mixed Use district and the Family Entertainment District.

3. Setbacks

Front (measured from property line)
Residential Village. The minimum setback is conditional based on balancing the objective of locating buildings within 10 feet of the sidewalk with the objective of maintaining the existing tree canopy.

Retail/Office Mixed Use. Setback is conditional based upon adjacent roadway type and adjacent development. Encroachment over and onto public sidewalk for second story porch and columns or balcony is allowed.

Retail/Residential Mixed Use. Setback is conditional based upon adjacent roadway type and adjacent development. Encroachment over and onto public sidewalk for second story porch and columns or balcony is allowed.

Family Entertainment. The minimum setback is 0 feet and the maximum setback is 10 feet. Encroachment over public sidewalk for second story porch or balcony is allowed.

Civic/Institutional Mixed Use. Setback is conditional based upon adjacent roadway type and adjacent development. Encroachment over and onto public sidewalk for second story porch and columns or balcony is allowed.

Rear (measured from property line)
All Districts. 10 feet (not including buffers)

Side (measured from property line)
Interior – 0 feet (commercial)
10 feet (residential townhouse or detached unit)
Between buildings – 10 feet (commercial) (or 15 feet where emergency access is needed)
10 feet each side or 20 feet on one side (residential townhouse or detached unit).
Corner – same as front setback

4. Buffers

Buffers shall be as shown in Chapter 3, Map 6 – Incentive Zoning and Buffers Map (page 9).

5. Parking

The Historic Downtown area is envisioned as a pedestrian destination where the automobile is used primarily as a means of arrival and departure. Therefore, within the Historic Downtown parking can be shared by different uses and a portion of the available parking will be provided on-street, in public lots and in communal public areas. To accommodate shared parking and address urban site constraints, some on-site parking may be reduced, as indicated below. In such cases, the difference between the parking spaces required and the parking spaces provided on-site shall be contributed to the Historic Downtown Parking Fund. The amount of the contribution shall be determined by subtracting the number of on-site parking spaces provided from the number of required spaces, then multiplying that figure by $4500*. Resources in the Parking Fund can only be used to develop shared parking within the area shown on the Boundary Map (page 4) within this document.

Parking Requirements

Residential Village

Parking requirements in the Residential Village shall be two spaces per unit.

Retail/Residential Mixed Use

On- site parking requirements for the commercial portion of the development may be reduced by up to 50% of the Unified Development Code Parking requirements for projects consistent with the 2003 Alpharetta Downtown Plan. *(Contribution to the Parking Fund shall be made for reduced spaces as noted above.) Parking requirements for the residential portion of the development shall be two spaces per unit.

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In order to promote and encourage pedestrian activity, a 100% parking waiver is offered for the development or placement of certain uses within historic downtown development or placement of certain uses within historic downtown provided that no loss of existing parking spaces occurs as a result of such development or placement unless City Council approval is granted.

Uses exempt from providing code required parking shall be as follows:
1.) restaurant (not including fast food, buffet or restaurants having locations in three or more states unless originating in Alpharetta.)
2.) entertainment venue (Jazz club, comedy club, theater, etc.)
3.) gourmet / specialty food store (cheese shop, candy store, fudge shop, etc.); 4.) boutique store (clothing, jewelry, etc.)
5.) home décor and accessory store (but not including home improvement and supply stores such as paint, carpeting and flooring stores.)
6.) art gallery
7.) gift store
8.) florist
9.) bakery
10.) coffee / ice-cream shop
11.) book / stationery store
12.) microbrewery (craft beers)

Retail/Office Mixed Use

On-site parking requirements for the retail, restaurant and office portions of the development may be reduced by up to 50% of the Unified Development Code requirements for projects consistent with the 2003 Alpharetta Downtown Plan. *(Contribution to the Parking Fund shall be made for reduced spaces as noted above.) Parking requirements for the residential portion of the development shall be two spaces per unit.

Civic/Institutional Mixed Use

Parking requirements for Civic and Institutional uses shall be in accordance with the Unified Development Code.
On-site parking requirements for the retail and office portions of the development may be reduced by up to 50% of the Unified Development Code requirements for projects consistent with the 2003 Alpharetta Downtown Plan. *(Contribution to the Parking Fund

shall be made for reduced spaces as noted above.) Parking requirements for the residential portion of the development shall be two spaces per unit.

Family Entertainment

On-site parking requirements for Family Entertainment uses may be reduced by up to 25% of the Unified Development Code requirements for projects consistent with the 2003 Alpharetta Downtown Plan. On-site parking requirements for the retail and office portions of the development may be reduced by up to 50% of the Unified Development Code requirements for projects consistent with the 2003 Alpharetta Downtown Plan.
*(Contribution to the Parking Fund shall be made for reduced spaces as noted above.)

6. Accel / Decel Lanes and Curb Cuts

In order to limit sidewalk interruption, no acceleration or deceleration shall be provided within the Historic Downtown District. Curb cuts shall be minimized to the greatest extent possible and shared between properties wherever practical.

7. Building Coverage

The maximum building coverage in all districts is 90%.

8. Minimum Size Requirements

Floor Area – 1200 sq. ft. (townhouse, condo. and detached units)
Unit width – 24 feet (townhouse units)
Lot width – 24 feet (townhouse units)
50 feet (detached units)
Lot area – Townhouse: 5400 sq. ft. (1800 sq. ft. / unit; minimum of 3 units)
- Single Family (detached units): 5000 sq. ft.

9. Tree Ordinance Incentives Specific to Historic Downtown

Specimen Trees

Specimen trees to be saved are identified in Chapter 3, Historic Downtown Tree Survey Map (pages 10 - 13). Every effort shall be made to incorporate the trees identified on the map into development plans.

Recompense

Specimen recompense units may be used towards other species in compliance with the Historic Downtown Landscape Guidelines (Chapter 5). Specimen understory trees may be removed without providing an alternate design. Recompense units may be used toward other species in compliance with the Historic Downtown Landscape Guidelines.

Critical Root Zone (CRZ)

A 20% encroachment into the CRZ will be allowed under the following circumstances:

1. In previously compacted areas of the CRZ, pervious paving will be allowed.
2. Outdoor decks on piers may be used in the CRZ.
3. A 3-year maintenance contract will be required.

Mitigation Fund

Requirements of the UDC Tree Ordinance that cannot be met on site shall be mitigated through a payment (comparable to the value of the required trees) to the Historic Downtown Tree and Art Fund. Resources from this fund may only be used within the area shown on the Boundary Map (Chapter 3) of this document to purchase street trees and enhance public spaces.

10. Rezoning Requirements

Properties that are currently zoned for commercial uses do not have to be rezoned in order to add residential or civic uses; however, a conditional use approval through the public hearing process is required to add residential and civic uses to property zoned commercial.

However, the following properties are subject to rezoning if development under these regulations is sought:

1. All properties within the Residential Village District.
2. All properties within the Family Entertainment District.
3. All properties currently zoned residential that are shown in this document to include non-residential uses.

11. Zoning Designation and Process

Land developed in accordance with this document shall be shown on the official zoning map with the letters 'HD' (historic district) added to the zoning designation for that property.
For example, property zoned 'C-2' and developed in accordance with this document shall be shown as 'C-2HD' on the official zoning map; Property currently zoned 'R-15' and rezoned for townhouse development in accordance with this document shall be designated as 'R-10MHD' on the official zoning map.

These incentive zoning regulations do not create an additional layer of review. Since the incentive zoning regulations are used in place of the existing zoning regulations, (except for requirements not addressed in this document), at the developer's request, the plan review and permitting process remains unchanged. In other words, plans that comply with these regulations

for property that is not subject to rezoning (see Sec. 4.10, above) will be reviewed in accordance with standard plan review procedures. Properties required to be rezoned are subject to the standard public hearing process prior to plan review and permitting.

12. Zoning Classifications Permitted

A. The following existing zoning classifications along with their respective district regulations, (except as superseded herein), shall be permitted for properties within the Historic District:
C-1, Neighborhood Commercial
C-2, General Commercial
SU, Special Use
OP, Office Professional
MU, Mixed Use
R-10M, Residential Dwelling, attached (10 units/ac. max.)
R-8A, Residential Dwelling, attached (8 units/ac. max.)

R-4A, Residential Dwelling, attached (4 units/ac. max.)
R-15, Residential Dwelling, detached (15,000 sq. ft. min. lot size)
R-12, Residential Dwelling, detached (12,000 sq. ft. min. lot size)
R-10, Residential Dwelling, detached (10,000 sq. ft. min. lot size)

B. In addition to the above listed zoning classifications, the following, additional zoning classification shall be permitted with the Historic District:

R-8, Residential Dwelling, detached (Garden Home)

C. R-8 District Regulations

1. Definition: Garden Home – a fully detached or semi-detached, 'For Sale' residential unit having at least one side yard and situated on a platted lot.
2. Development Size and Density: Property must be at least 30,000 sq. ft. in size to be zoned and developed under R-8 regulations. The minimum project size is 5 units. The maximum development density is 8 units / acre.
3. Minimum Lot size: 3600 sq. ft.
4. Minimum Lot width: 40 ft.
5. Minimum Dwelling size: 1500
6. Minimum Unit width: 24 ft.
7. Setbacks:
    a. Front - 10 ft., min.; 20 ft.,max.
    b. Side - 5 ft. on each side OR 10 ft. on one side and 0 ft. on the other side. (A minimum of 5 ft. is required between buildings.)

c. Side Corner – 10 ft., min.; 20 ft.,max.
d. Rear – 10 ft., min.

8. Height: 3 stories or 40 ft., whichever is less
9. Accessory Structures allowed: fence, storage building, garage, gazebo, trellis
10. Parking: 2 spaces within an enclosed structure
11. Architectural Style of Garden Homes must comply with the design requirements contained herein and incorporate the Historic Aesthetic Style Features outlined in Chapter 6 that correspond to the selected Architectural Style.

TABLE 'A' LIST OF PERMISSIBLE AND CONDITIONAL USES

On the following table, an open circle "O" means that the use will be permitted in that district only if a Conditional Use Permit is granted by the City Council. An "X" means that the use is permitted in the zone district subject to the general provisions of the Unified Development Code. For uses not included in this list or when the Director of Community Development is unable to determine placement, application shall be made to the Board of Appeals for interpretation.

C/MU – Civic / Mixed Use
RO/MU – Retail Office / Mixed Use
RR/MU - Retail Residential / Mixed Use
FE – Family Entertainment
RV – Residential Village
OS – Green / Open Space
** - to be located above ground floor

USES	RV	C-MU	R/O-MU	R/R-MU	FE	G/OS
Amphitheater	X			X		
Art Galleries	X	X	X	X		

Associations (club, lodge)	X	O	O	X		
Athletic Facilities	X	O**	O**	X		
Auditorium	X			X		
Automotive Parts (retail sales only)		X				
Bakery	X	X	X	X		
Bank (without drive-thru)	X	O	O			
Barber/Beauty Shop (salon)		X	X			
Bed and Breakfast			X	O		
Book or Stationery Story		X	X	X		
Broadcasting Studio	O			O		
Carpet and Rug Sales		X	X			
Cemetery						X
Church, Synagogue		O	O			
Clinic		X	X			
Congregate Housing (Assisted Living Facility)		O	O			
Contractor's Office (without material storage)		X**				
Dance / Karate Studio		X**	X**			
Day Care Center		X**	O**	X**		
Drug Store (without drive-thru)		X	X			
Dry Cleaning (pick up station without drive-thru)		X	X			
Dwelling, Single Family Attached	X	X**	X**		X	
Dwelling, Single Family Detached					X	
Fire Station	X					
Florist, Retail	X	X	X	X		
Furniture Store	X	X	X	X		
Gift Shop	X	X	X	X		
Gourmet or Specialty Food Store	X	X	X	X		
Hardware / Garden Shop		X	X			
Heliport	O					
Home Products Shop	X	X	X	X		
Hotel	O	O	O	O		
Interior Design Studio	X**	X**	X**			
Liquor Store		X				
Museum and Library	X			X		
Office	X	X**	X**			
Park / Playground	X	X	X	X	X	X
Parking Lot (commercial)	X	X	X	X		
Pet Day Care / Grooming		X**	X**			

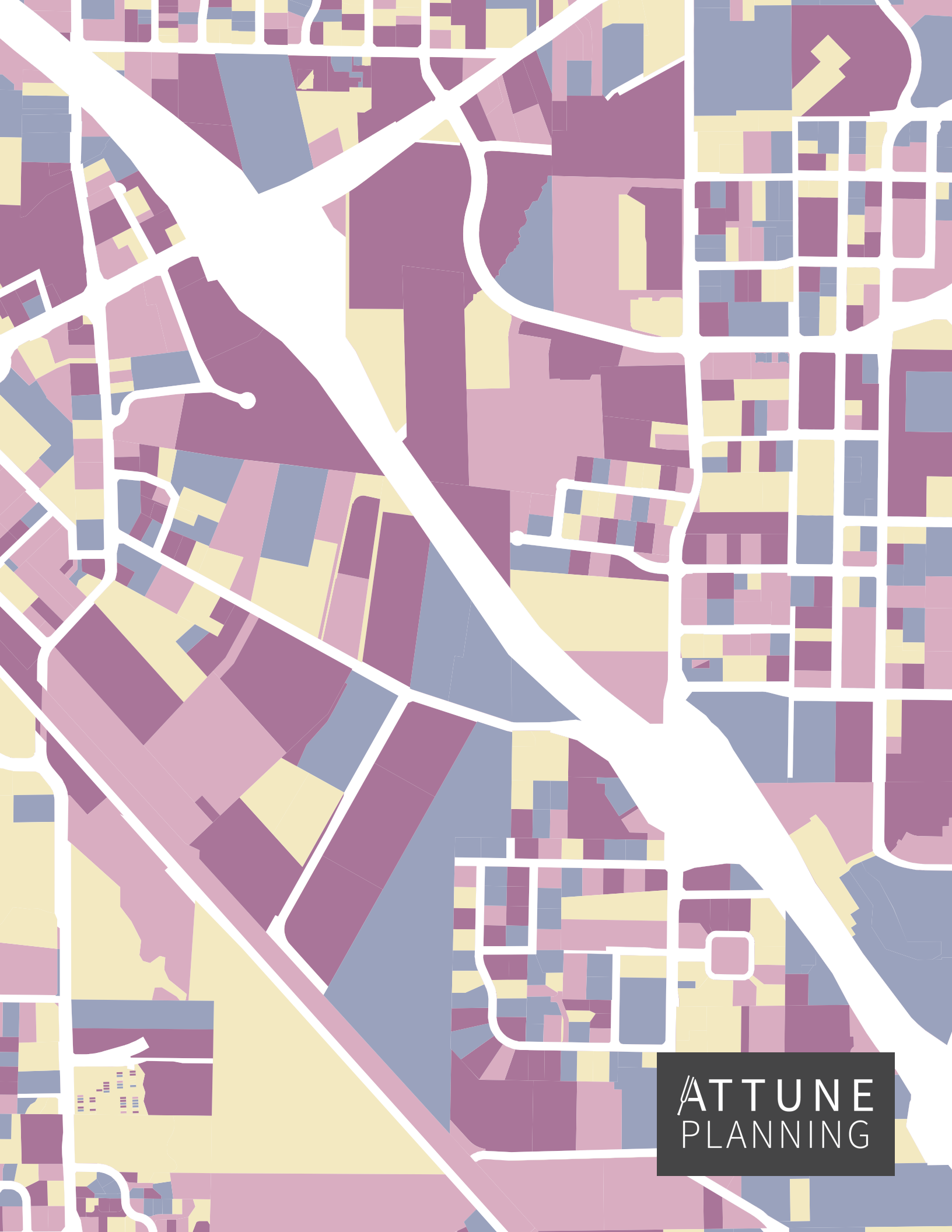
Print Shop	X	X	X	X		
Public Building	X			X		
Recreation Facilities, Indoor (Bowling, Skating, Billiards, Children's Event Facilities)	O			X		
Recreation Facilities, Outdoor (playing fields, skating)	O			X		
Rental Store (with no outside storage)		X	X			
Restaurant (without drive-thru) including coffee shop, deli, ice cream shop	X	X	X	X		
Retail Store	X	X	X	X		
School, Academic	O					
School, Commercial	X**	X**	X**			
Shop and /or Studio, Craftsman / Artist	X	X	X	X		
Spa		X	X			
Theater, Cinema	O			X		

CONDITIONAL USE REVIEW CRITERIA

When reviewing a conditional use, consideration shall be given to factors associated with the use including, but not limited to, the following:

1. site design
2. property access
3. hours of operation of the business
4. vehicular trips generated by the use
5. impact of the use on surrounding properties
6. impact of the use on the natural features of the site

This conclude the report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